



**NEW MEXICO
ENVIRONMENT DEPARTMENT**



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Cabinet Secretary

BRUCE YURDIN
Acting Deputy Secretary

NOTICE OF VIOLATION

Certified Mail - Return Receipt Requested

November 30, 2018

Ms. Suzanne Bilbrey, P.E.
Director, Environmental Center of Excellence
AFCEC/CZ
Air Force Civil Engineer Center
2261 Hughes Ave., Ste 155
Lackland AFB, TX 78236-9853

RE: Notice of Violation, Cannon Air Force Base, Soil and Groundwater Contamination with Per- and Poly-Fluoroalkyl Substances (“PFAS”)

Dear Ms. Bilbrey:

The New Mexico Environment Department (“NMED”) has determined that the above referenced facility is operating in violation of the New Mexico Water Quality Act (“WQA”) and its correlated Ground and Surface Water Protection Regulations (“Regulations”), 20.6.2 NMAC. Please be advised that prompt action is required as described herein.

NMED is in receipt of your October 26, 2018 letter in response to the NMED letter of September 26, 2018 in which NMED required the U.S. Air Force (“Air Force”) to take actions required under 20.6.2.1203 NMAC. The letter fails to comply with several of the requirements specified in NMED’s September 26, 2018 letter.

While NMED understands that the Air Force is addressing PFAS contamination at its installations pursuant to a nationwide program, the Air Force must nonetheless comply with specific requirements of New Mexico law and regulations.

The WQA and the Regulations provide explicit authority to NMED to prevent and abate water pollution. The WQA at NMSA 1978, § 74-6-2(B) defines the term “water contaminant” as “any substance that could alter, if discharged or spilled, the physical, chemical, biological or radiological qualities of water.” As such, all of the PFAS, and not solely PFOA and PFOS,

compounds that the Air Force has discharged into groundwater are “water contaminants” under New Mexico law.

The WQA defines the term “water pollution” as “introducing or permitting the introduction into water, either directly or indirectly, of one or more water contaminants in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or to unreasonably interfere with the public welfare or the use of property.” NMSA 1978, § 72-6-2(C). The statutory definition is not limited to human health, and explicitly includes animal and plant life and property.

To the extent that the PFAS water contaminants emanating from Cannon Air Force Base (“CAFB”) have injured or threaten to injure human health, animal or plant life, or property, or have unreasonably interfered with public welfare or the use of property such as water wells, farms and dairies, such injuries and interferences are clearly subject to the abatement requirements of the Water Quality Act and the Ground and Surface Water Protection Regulations.

Specific deficiencies in the Air Force’s October 26, 2018 response are listed below.

- 1. The Air Force has failed to sample all water supply wells (domestic drinking water, irrigation, dairy, industrial) located southeast of, and within four miles of, the base.**
NMED recognizes that not all well owners in the August to October 2018 time frame may have elected to have their wells tested when initially contacted by the Air Force. Our letter of September 26, 2108 therefore requested that the Air Force provide documentation of due diligence that well owners were in fact contacted, advised of the need for testing, and made an informed judgment not to have their well(s) tested. This documentation was not provided to NMED. This testing is necessary to define the extent of groundwater contamination by PFAS emanating from CAFB, and to identify locations where PFAS water contaminants have injured or threaten to injure human health, animal or plant life, or property, or have unreasonably interfered with public welfare or the use of property. Drinking water is not the only potential pathway by which humans may be exposed to PFAS contaminants emanating from CAFB. PFAS in irrigation water can bioaccumulate in crops and in livestock that eat contaminated crops. PFAS in water used by livestock also can bioaccumulate in livestock. Humans who consume meat from contaminated livestock or dairy products including milk and cheese, for example, generated from contaminated livestock can therefore be exposed to PFAS contaminants emanating from CAFB via the food web. Within 15 days of receipt of this Notice of Violation (“NOV”), the Air Force shall collect PFAS samples from all irrigation, dairy and industrial water supply wells that are located southeast of and within four miles of CAFB, within the identified zone of the paleochannels, that have not been previously sampled by the Air Force and reported to NMED and for which well owner access approval has been granted. A complete report of all results from this sampling shall be submitted to NMED no later than January 15, 2019.
- 2. The Air Force has failed in its most recent water well testing to analyze and report all PFAS compounds that are included in EPA Test Method 537.**

As discussed above, all PFAS compounds that CAFB has discharged into groundwater are “water contaminants” under New Mexico law. The complete analysis for all PFAS compounds, will allow the Air Force, NMED, and others to track the entire suite of contaminants and provide sound, science-based decisions on additional monitoring and interim and final treatment options moving forward. Receiving results from only two contaminants, PFOS and PFOA, as the Air Force is now reporting, may unnecessarily hinder the Air Force and NMED understanding and approach to cleanup. Within seven days of receipt of this NOV the Air Force shall submit analytical results for all PFAS compounds that are included in EPA Test Method 537. All future testing of well water samples shall include all analytes in the recently published EPA Test Method 537.1. PFAS compound perfluorobutanoate (PFBA, also known as perfluorobutanoic acid, perfluorobutyric acid and heptafluorobutyric acid) is detectable by EPA Test Method 537.1 and laboratories typically report and quantitate PFBA in a Method 537.1 analysis if it is present. All future PFAS testing of soil and water on and near CAFB shall include quantification and reporting of PFBA.

3. The Air Force has failed to submit a proposal, subject to NMED approval, to conduct a hydrogeologic investigation to define the extent of groundwater contamination by PFAS emanating from CAFB.

In order to satisfactorily and effectively conduct a hydrogeological investigation, the Air Force shall participate in a hydrogeology technical working group (“TWG”) that includes staff from the Air Force Civil Engineering Center, NMED, New Mexico Department of Health (“NMDOH”), New Mexico Department of Agriculture (“NMDA”), EPA Region 6, and the U.S. Geological Survey. The hydrogeology working group shall assemble and review all published literature on groundwater conditions in the vicinity of CAFB and shall perform groundwater modeling on plume migration and plume capture by existing off-Base water supply wells. The hydrogeology working group shall identify data gaps, and the Air Force shall submit work plan(s), subject to NMED review and approval, as necessary to fill the identified data gaps. The hydrogeology working group shall also make recommendations for a systematic groundwater monitoring program that includes periodic testing of wells located within and outside of the PFAS contamination plume. Funding for the operation of the TWG, filling of data gaps, and groundwater monitoring must be borne by the Air Force. The initial report, that will address a) identification of data gaps, b) proposals for modeling, c) proposals for plume capture and d) the specifications and schedule for groundwater monitoring, from the TWG shall be submitted to NMED no later than 90 days from the date of this letter.

4. The Air Force has failed to correct the erroneous statement in Section 4.2.2 of the CAFB Site Investigation Report.

The Air Force asserts that, “[t]he installation water supply wells were previously sampled as part of the Third Unregulated Contaminant Monitoring Rule for PFAS with no detections reported.” The term “PFAS” includes many chemical constituents, not just PFOS and PFOA. PFAS compounds perfluorobutanesulfonic acid (“PFBS”) and perfluorohexanesulfonic acid (“PFHxS”) were detected in CAFB water supply wells 3, 8,

Ms. Bilbrey
November 30, 2018
Page 4 of 5

9 and 12, and in a sample from the CAFB drinking water treatment plant in 2016 and 2017. Within seven days of receipt of this NOV, the Air Force shall submit a revised and corrected Site Investigation Report that makes reference to the detections of PFBS and PFHxS in CAFB water supply wells and in the drinking water treatment plant.

Since the issuance of NMED's September 26, 2018 letter, and pursuant to 20.6.3.1203.A(5) NMAC, additional actions are required for the Air Force to contain and remove or mitigate the damage caused by the discharge of PFAS into groundwater at CAFB. Within 30 days of receipt of this NOV, the Air Force shall submit for NMED review and approval a work plan to accomplish the following:

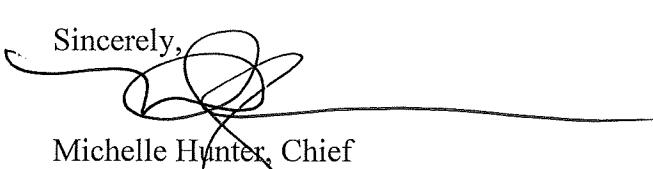
- A. Identification and timeline of options to be evaluated as potential short-term corrective measures for affected dairies, including water hauling and water treatment of contaminated well sources for both livestock and irrigation of crops.**
- B. In conjunction with the findings of the TWG, evaluation of the feasibility of installing one or more treatment systems on contaminated water supply wells.**

This Notice of Violation is NMED's final effort to obtain the Air Force's voluntary compliance in these matters. Failure to comply with this Notice of Violation may result in NMED's issuance of an Administrative Compliance Order that can assess a civil penalty in accordance with the provisions of NMSA 1978, Section 74-6-10. Civil penalties may be assessed for up to \$15,000 per day for each violation of the WQA § 74-6-5 and any regulation promulgated pursuant to that section. Civil penalties may also be assessed for up to \$10,000 per day for each violation of any other provision of the WQA, or any regulation, standard, or order adopted pursuant to such other provision.

Nothing in this letter shall be construed as relieving the Air Force of the obligation to comply with all requirements of the Regulations, the WQA, and other applicable federal, state, and local laws, regulations, permits or orders.

If you have any questions regarding this letter, please contact Dennis McQuillan, NMED Chief Scientist at (505) 827-2140, or me, at (505) 827-2919.

Sincerely,



Michelle Hunter, Chief
Ground Water Quality Bureau

MH:DM

enc: New Mexico Ground and Surface Water Protection Regulations (in part); Section 20.6.2.1203 NMAC.

cc: B. Tongate, NMED
J. Witte, NMDA
L. Gallagher, DOH
D. Hunter, DOH
A. Parra, NMDA
D. Cox, NMDA
M. Landen, DOH
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N. McDuffie, NMED-GWQB
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S. Stringer, NMED-DWB
D. McQuillan, NMED-OTS
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JAMES C. KENNEY
Cabinet Secretary Designate

JENNIFER J. PRUETT
Deputy Secretary

NOTICE OF VIOLATION
Certified Mail – Return Receipt Requested

February 6, 2019

Joseph Campo, Colonel, U.S. Air Force
Commander, Holloman Air Force Base
49 FW/CC
490 First St., Suite 1700
Holloman AFB, NM 88330-8277

RE: Notice of Violation, Holloman Air Force Base, Groundwater Contamination with Per and Poly-Fluoralkyl Substances, Groundwater Discharge Permit #1127

Dear Colonel Campo,

The New Mexico Environment Department (NMED) has determined that the above referenced facility is operating in violation of the facility's groundwater discharge permit (DP-1127 or Discharge Permit), which constitutes a violation of the New Mexico Water Quality Act (WQA) and the associated Ground and Surface Water Protection Regulations (Regulations), 20.6.2 NMAC. On December 18, 2015, NMED issued DP-1127 to Holloman Air Force Base (HAFB or Base or Permittee) pursuant to Section 20.6.2.3109 NMAC of Regulations. Section 20.6.2.3104 NMAC requires the permittee to comply with the terms and conditions of the discharge permit.

NMED is in receipt of HAFB's November 2018 *Final Site Inspection Report – HAFB* (Report), detailing the Base's site inspection of aqueous film forming foam (AFFF) release areas. The Report documents the results of site investigation activities conducted at five AFFF release areas located at the Base, evaluating all environmental media via sampling at each of the release areas. The Report concludes that at each of the release sites, groundwater concentrations of PFOS (perfluorooctanesulfonic acid), PFOA (perfluorooctanoic acid), or sums of PFOS and PFOA concentrations violate the 20.6.2.3103.A(2) NMAC standards for toxic pollutants and exceed the US EPA Health Advisory (HA) value of 0.07 parts per billion (or ppb or µg/L), which is equivalent to 70 parts per trillion (ppt).

In addition, the Report identifies groundwater concentrations in some areas of approximately 1,294,000 ppt which is 18,486 times greater than the HA value of 70 ppt. NMED is very concerned for public health and is evaluating the potential uses of groundwater in the area to ensure the owners of private, agricultural, and industrial wells are informed of the contamination in the area stemming from releases at HAFB.

VIOLATION 1 [Operational Plan - Condition #2]

Permit Condition #2 states that “the permittee shall operate in a manner such that standards and requirements of Sections 20.6.2.3101 and 20.6.2.3103 NMAC are not violated.” The regulations at 20.6.2.3103 specify maximum allowable concentration in groundwater for specific contaminants. The regulations at 20.6.2.3103.A(2) specify that a toxic pollutant shall not be present at a concentration shown by credible scientific data and other evidence appropriate under the WQA, currently available to the public, to have potential for causing one or more of the following effects upon exposure, ingestion, or assimilation either directly from the environment or indirectly by ingestion through food chains: (1) unreasonably threatens to injure human health, or the health of animals or plants which are commonly hatched, bred, cultivated or protected for use by man for food or economic benefit; as used in this definition injuries to health include death, histopathologic change, clinical symptoms of disease, behavioral abnormalities, genetic mutation, physiological malfunctions or physical deformations in such organisms or their offspring; or (2) creates a lifetime risk of more than one cancer per 100,000 exposed persons.

Condition #2 has been violated because, as stated in the Report (see Table 5.0-1), the sum of groundwater concentration of PFOS and PFOA at the AFFF Release Area 3: Apache Mesa Golf Course measuring 0.1371 µg/L exceeds the HA value of 0.07 µg/L. This has caused a threat to human health and the environment.

VIOLATION 2 [Contingency Plan – Condition #32]

Permit Condition #32 states in part that, in the event that groundwater monitoring indicates that a groundwater quality standard identified in Section 20.6.2.3103 NMAC is exceeded for groundwater with total dissolved solids (TDS) concentration less than or equal to 10,000 mg/L a toxic pollutant (defined in Subsection T (2) of 20.6.2.7 NMAC) is present in a groundwater sample and in any subsequent groundwater sample collected from a monitoring well required by this Discharge Permit, the permittee shall enact the Discharge Permit contingency plan (CP). That CP requires the Permittee to propose measures to ensure that the exceedance of the standard or the presence of a toxic pollutant will be mitigated by submitting a corrective action plan (Plan) to NMED for approval. The Plan shall include a description of the proposed actions to control the source and an associated completion schedule. The Plan shall be enacted as approved by NMED.

The Report identifies exceedances of PFOA (0.0891 ug/L) and PFOA+PFOS (0.1371 ug/L) in MW-03 in AFFF Release Area 3: Apache Mesa Golf Course. MW-03 is associated with the Apache Mesa Golf Course reuse and is included in the DP-1187 monitoring requirements. MW-03 was sampled on September 6, 2018, and TDS was reported to be 8,000 mg/L, proving that a groundwater quality standard identified in Section 20.6.2.3103 NMAC is exceeded for groundwater with TDS less than or equal to 10,000 mg/L.

Condition #32 has been violated because the required Plan has not been submitted.

To correct Violations 1 and 2, the Permittee must submit the required CP as soon as practicable but not to exceed 60 days from the date of this letter. Furthermore, the Permittee must submit a permit modification

Col. Joseph Campo
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Page 3

pursuant to Condition #32 as soon as practicable but not to exceed 90 days from the date of this letter to achieve compliance with 20.6.2 NMAC. That modification shall propose the monitoring of discharges of perfluorinated compounds on a monthly basis at all monitoring locations in the permit.

Additionally, failure to comply with this Notice of Violation may result in NMED's issuance of a compliance order that assesses a civil penalty pursuant to WQA, NMSA 1978, Section 74-6-10. Civil penalties may also be assessed for up to \$15,000 per day for each violation of the WQA, NMSA 1978, Section 74-6-5, any regulation promulgated pursuant to that section or any permit issued pursuant to that section. Civil penalties may be assessed for up to \$10,000 per day for each violation of any other provision of the WQA, or any regulation, standard, or order adopted pursuant to such other provision.

As an alternative to the remedies described above, NMED may commence an action in district court for appropriate relief, including injunctive relief.

Nothing in this letter shall be construed as relieving the permittee of the obligation to comply with all requirements of the Discharge Permit, the Water Quality Control Commission Regulations, 20.6.2 NMAC, the WQA, and other applicable federal, state, and local laws, regulations, permits, or orders. This letter is intended to obtain voluntary compliance in addressing violations of certain requirements of the Discharge Permit and may not address all violations. It is the responsibility of the permittee to be familiar with and comply with the Discharge Permit.

If you have any questions regarding this matter, please contact Steve Pullen, Program Manager of the Ground Water Pollution Prevention Section, at (505) 827-2962.

Sincerely,



Michelle Hunter, Chief
Ground Water Quality Bureau

MH:SP

cc: James Kenney, NMED
Jennifer Pruett, NMED
Michael Kesler, NMED
Dennis McQuillan, NMED
John Kieling, NMED-HWB
Dave Cobrain, NMED-HWB
Heidi Krapfl, NMDOH
Chris Segura, AFCEC
David Griffin, 49 CES/CEI
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Jeniffer Montes, 49 CES/CEI
Laurie King, EPA-Region 6 (6PD-N)



DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
JOINT BASE SAN ANTONIO LACKLAND TEXAS

10 January 2019

Ms. Suzanne Bilbrey, P.E.
Director, Environmental Directorate
Air Force Civil Engineer Center
2261 Hughes Avenue, Suite 155
JBSA Lackland TX 78236

Ms. Michelle Hunter
Chief, Ground Water Quality Bureau
New Mexico Environment Department
1190 South Saint Francis Drive (87505)
Post Office Box 5469
Santa Fe, NM 87502-5469

RE: Notice of Violation, Cannon Air Force Base, Soil and Groundwater Contamination with Per and Poly-Fluoroalkyl Substances (PFAS)

Dear Ms. Hunter,

The United States Air Force (Air Force) acknowledges the receipt of the Notice of Violation (NOV) dated 30 November 2018 issued against Cannon Air Force Base, New Mexico. Based on our review of the legal authority cited within the NOV, the New Mexico Ground and Surface Water Protection Regulations (20.6.2 NMAC) do not apply to the Air Force and the New Mexico Environmental Department (NMED) lacks authority to enforce the cited regulations against the Air Force. However, when the Air Force detected perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) in drinking water at concentrations above the United States Environmental Protection Agency's (EPA's) lifetime health advisory (LHA) levels, we took immediate action under the federal environmental cleanup law to provide alternate drinking water to impacted water users. Our ongoing actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. §§ 9601-9675) remain aimed at protecting human health from PFOS and PFOA concentrations that exceed unacceptable levels. A detailed explanation of the Air Force position follows below.

Legal constraints limit the Air Force's authority and ability to investigate and mitigate PFAS compounds under the New Mexico Water Quality Act. States may regulate Federal facilities only to the extent that such regulation is clearly authorized by Congress. Congressional authorizations are generally referred to as "waivers of sovereign immunity." Where no waiver of sovereign immunity exists, the Federal government is not subject to state regulation. See Mayo v. United States, 319 U.S. 441, 445 (1943); see also Department of Energy v. Ohio, 503 U.S. 607

(1992). Along the same lines, Federal facilities that are subject to state regulation are not liable to pay fines and penalties for violating state requirements unless Congress' waiver of sovereign immunity expressly includes the payment of fines and penalties for violating state requirements.

The NOV cites generally to the New Mexico Water Quality Act and the New Mexico Ground and Surface Water Protection Regulations at 20.6.2 NMAC for authority. The NOV specifically alleges that the Air Force failed to take actions required under 20.6.2.1203 NMAC, which prescribes corrective actions related to unauthorized discharges. The NOV does not, however, cite to a violation of any Federal environmental statute to which the United States has waived sovereign immunity, in whole or in part.

In this instance there is no Federal environmental statute for which a waiver of sovereign immunity makes the New Mexico Ground and Surface Water Protection Regulations applicable to the Air Force. In addition, no Federal waiver of sovereign immunity makes the Air Force liable to pay fines and penalties for violating the New Mexico groundwater protection regulations. Consequently, NMED lacks the authority to enforce the New Mexico Water Quality Act and related New Mexico Ground and Surface Water Protection Regulation against the Air Force.

As noted above, the Air Force is assessing and mitigating PFOS and PFOA at and emanating from Cannon Air Force Base pursuant to the CERCLA, the Defense Environmental Program statute (DERP, 10 U.S.C. §§ 2701-2711), and CERCLA regulations referred to as the National Contingency Plan regulations (NCP, 40 C.F.R. Part 300).

The Air Force has authority to respond to PFOS and PFOA levels in drinking water under CERCLA Section 104(a) (42 U.S.C. § 9604(a)) because these two PFAS compounds are "pollutants or contaminants" under CERCLA and the Air Force determined that their presence in drinking water at levels above the EPA LHAs poses an imminent and substantial danger to public health or welfare. That risk determination is based on available toxicity data. No such determinations have been made for other PFAS compounds at this time, at least in part because numerical criteria to assess unacceptable risk/hazard does not exist. Accordingly, the Air Force's efforts in response to PFAS are focused on PFOS and PFOA compounds.

Operating under its CERCLA and DERP authorities, the Air Force's priority is to protect drinking water supplies for humans from unacceptable levels of PFOS/PFOA that result from our activities. Where the Air Force is the source of PFOS/PFOA that exceeds the LHA in drinking water, the Air Force provides alternative drinking water as quickly as possible to affected humans. Then the Air Force implements more permanent solutions as needed to ensure affected humans have drinking water available that meets the LHA levels. Permanent solutions can include installation of treatment systems or connection to public utilities to provide longer-term assurances that people are not drinking water containing PFOS/PFOA above unacceptable levels. In addition, as required by CERCLA, the Air Force collaborates with local, state, and federal regulatory officials and the affected community as we implement response actions.

The Air Force will utilize its Program Requirement Development (PRD) Process to program for future requirements. The PRD is a year-long formal process that assists the Air Force with identifying, estimating, and validating the resources needed to execute an

Environmental Restoration Program that complies with CERCLA, DERP, the NCP, and United States Department of Defense directives. The process integrates planning, programming, budgeting, and execution with environmental liability requirements using cost development and estimating to produce validated requirements. The PRD includes standardized business processes that ensure consistency across installations resulting in a cohesive program that reliably identifies out-year requirements through preparation of Project Cost Estimating Assumptions Documents (PCEAD) as a first step.

The Air Force has programmed a Remedial Investigation (RI) for the Fiscal Year 2021 PRD cycle and information to populate the PCEAD is currently being collected. The RI is intended to fully identify the nature and extent of PFOS/PFOA in the vicinity of the Cannon Air Force Base. The RI is the next step in the environmental remediation process prescribed and described by CERCLA and the NCP.

Additionally, the Air Force is currently designing in-train point-of-use filtration systems for drinking water where the EPA LHA levels during the expanded Site Investigation phase were exceeded. Once installed, the filtration systems will be monitored frequently to ensure no breakthrough and PFOS/PFOA concentrations meet the EPA LHA. The installation of the filtration systems will replace the need for providing alternate water supplies.

Based on the foregoing explanation, the Air Force requests NMED withdraw the NOV the Department issued against Cannon Air Force Base and work with the Air Force to appropriately address NMED's concerns about PFAS through the CERCLA process.

Thank you for your consideration. If you have any questions, please let my Point of Contact on this matter, Mr. Christopher Segura, AFCEC/CZOW, know. He can be reached at (505) 853-5443 and christopher.segura.2@us.af.mil.

Sincerely,


Suzanne Bilbrey
Suzanne BILBREY, P.E.
Director, Environmental Directorate

cc:
AFLOA/JACE-FSC

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW MEXICO

UNITED STATES OF AMERICA,)
Plaintiff,)
v.) Case No.: 1-19-cv-46
NEW MEXICO ENVIRONMENT)
DEPARTMENT, and JAMES KENNEY,)
Secretary (in his official capacity),)
Defendants.)

COMPLAINT

The United States of America, on behalf of the United States Department of the Air Force, alleges as follows:

NATURE OF THE ACTION

1. This is a civil action for declaratory and injunctive relief by the United States of America, on behalf of the Air Force, challenging the final action by the New Mexico Environment Department ("NMED"), on behalf of the State of New Mexico, in issuing a permit to Cannon Air Force Base under the New Mexico Hazardous Waste Act ("HWA"), NMSA §§ 74-4-1-14, on December 19, 2018 (the "Permit") (Exhibit A);
 2. The Permit replaces the Air Force's existing HWA permit, for Cannon Air Force Base.
 3. The United States challenges the Permit's definition of "hazardous waste" for the purpose of corrective action in Permit Section 1.12 which is inconsistent with both the federal Resource Conservation and Recovery Act ("RCRA") and the HWA and is barred by sovereign immunity.
 4. The United States seeks (1) a declaration that the challenged language in Permit Section 1.12 is contrary to the HWA, RCRA, and the relevant state and federal implementing

regulations and is arbitrary, capricious, an abuse of discretion, not supported by substantial evidence in the record, or otherwise not in accordance with law and (2) all appropriate injunctive relief.

JURISDICTION AND VENUE

5. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345.

6. Venue is proper in the United States District Court for the District of New Mexico pursuant to 28 U.S.C. § 1391(b) because NMED conducts business in this district, the claims in this civil action arose in this district and the subject property is located in this district.

PARTIES

7. The Plaintiff in this action is the United States of America. The United States, acting through the Air Force, is the owner of the Cannon Air Force Base, which is located in Curry County, New Mexico and is the subject of the Permit.

8. Authority to bring this suit is vested in the United States Department of Justice by 28 U.S.C. §§ 516 and 519.

9. Defendant NMED is the state agency that regulates hazardous waste in the State of New Mexico under the HWA, N.M. Stat. Ann. 1978, § 74-4-1 *et seq.*

STATUTORY AND REGULATORY BACKGROUND

10. RCRA gives EPA authority over the management of hazardous waste. RCRA defines hazardous waste as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics" may pose a serious risk to human health or the environment if not properly managed. 42 U.S.C. § 6903(5).

11. Under section 3006 of RCRA, EPA may authorize states to administer and enforce their own state hazardous waste program in lieu of the federal program of Subchapter III of RCRA. 42 U.S.C. § 6926.

12. Consistent with RCRA section 3006, EPA approved the State of New Mexico's hazardous waste program, set forth in the HWA, and authorized the State to operate its program

in lieu of the federal program under Subchapter III of RCRA. EPA also authorized the State to issue and enforce permits for the storage, treatment, or disposal of hazardous waste. NMED therefore can issue hazardous waste permits to hazardous waste management facilities within the State of New Mexico.

13. The HWA generally requires that New Mexico promulgate hazardous waste regulations that are "equivalent to and no more stringent than federal regulations adopted by the federal environmental protection agency pursuant to the federal Resource Conservation and Recovery Act of 1976, as amended." N.M. Stat. Ann. 1978, § 74-4-4.A.

14. New Mexico has adopted the same definition of hazardous waste as in RCRA. Compare N.M. Stat. Ann. 1978 § 74-4-3(K) *with* 42 U.S.C. § 6903(5).

15. Section 6001(a) of RCRA contains a limited waiver of the United States' sovereign immunity as to the application of RCRA and state hazardous waste laws such as the HWA to federal facilities like Cannon Air Force Base. 42 U.S.C. § 6961(a).

16. The Permit constitutes, in whole or in part, a "final administrative action" subject to judicial review pursuant to section 74-4-14.A of the HWA. N.M. Stat. Ann. 1978, § 74-4-14.A. Under that statute, the action shall be set aside if it is: "(1) arbitrary, capricious or an abuse of discretion; (2) not supported by substantial evidence in the record; or (3) otherwise not in accordance with law." Id. § 74-4-14.C.

FACTS

17. The United States, through the Air Force, owns Cannon Air Force Base.

18. The challenged Permit replaces the existing permit, which, in most relevant part, addresses corrective action at Cannon.

19. The United States anticipates filing shortly a notice of appeal challenging the Permit in the New Mexico Court of Appeals, as a protective measure only. The United States further intends to move to stay that proceeding pending resolution of this case.

COUNT I --Permit Section 1.12 – Definition of Hazardous Waste

20. The allegations in Paragraphs 1-19 are incorporated herein.
21. The definition of “hazardous waste” for the purposes of corrective action in Permit Section 1.12 is inconsistent with the HWA and its implementing regulations.
22. The definition of “hazardous waste” for the purposes of corrective action in Permit Section 1.12 exceeds the scope of RCRA’s waiver of sovereign immunity, 42 U.S.C. § 6961(a), and so cannot be used in an HWA permit for a federal agency.

PRAYER FOR RELIEF

WHEREFORE, the United States of America prays that this Court order the following relief:

- (1) Declare that the language in Permit Section 1.12 defining “hazardous waste” for the purpose of corrective action is contrary to the HWA, RCRA, and the relevant implementing regulations under each statute.
- (2) Set aside the unlawful provisions of the Permit; and
- (3) Grant such other relief as may be just and proper.

Respectfully submitted,

/s/ Eileen T. McDonough
United States Department of Justice
Environmental Defense Section
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Washington, D.C. 20044
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(202) 514-3126

UNITED STATES DISTRICT COURT FOR THE
DISTRICT OF NEW MEXICO

STATE OF NEW MEXICO, *ex rel.* HECTOR
BALDERAS, Attorney General, and the
NEW MEXICO ENVIRONMENT
DEPARTMENT,

§
§ Case No. _____

§ Plaintiffs, § Complaint

§ v.
§

THE UNITED STATES and THE UNITED
STATES DEPARTMENT OF THE AIR
FORCE,

§ Defendants.
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THE STATE OF NEW MEXICO, by and through New Mexico Attorney General Hector H. Balderas, and the New Mexico Environment Department (collectively, “Plaintiffs” or the “State”), file this Complaint against the above-named Defendants and in support thereof allege as follows:

INTRODUCTION AND STATEMENT OF THE CASE

1. This is a civil action by the State against Defendants United States and the U.S. Department of the Air Force (collectively, “Defendants”) brought pursuant to the New Mexico Hazardous Waste Act, NMSA 1978, § 74-4-1 to -14.¹
2. This action arises from the improper disposal of and failure to contain or address contaminants and hazardous wastes at Cannon Air Force Base (“Cannon”), located approximately

¹ Concurrent with the filing of this Complaint, Plaintiffs have issued a notice to Defendants under the Resource Conservation and Recovery Act (“RCRA”) of their intent to bring a claim to remedy the imminent and substantial endangerment created by the conduct of Defendants described herein, and reserves the right to seek any additional remedies that may be available under the law, including but not limited to a claim for natural resource damages pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”) §107(a)(4), 42 U.S.C. § 9607(a)(4).

seven miles southwest of Clovis, New Mexico and above the Ogallala Aquifer, and Holloman Air Force Base (“Holloman”), located in the Tularosa Basin between the Sacramento and San Andreas mountain ranges ten miles west of Alamogordo, New Mexico, by Defendants, resulting in contamination and pollution of the environment, including public and private water sources both on- and off-site, with per- and polyfluoroalkyl substances (“PFAS”), also known as fluorochemicals, such as perfluorooctanoic acid (“PFOA”) and perfluorooctanesulfonic acid (“PFOS”), and other known or suspected toxic compounds.

3. Defendants’ discharges and the resulting contamination at Cannon and Holloman have created an imminent and substantial endangerment to human health and the environment.

4. As a result of this ongoing and persistent contamination and pollution, the State seeks declaratory and injunctive relief, and reimbursement of past and future costs incurred by the State associated with these environmental and public health risks and injuries at Cannon and Holloman.

JURISDICTION AND VENUE

5. This Court has subject matter jurisdiction over this action under 28 U.S.C. § 1331.

6. This Court has the authority to grant declaratory relief, 28 U.S.C. § 2201, as well as further relief requested in this Complaint, including injunctive relief, 28 U.S.C. § 2202.

7. This Court has personal jurisdiction over Defendants as they conduct sufficient business with sufficient minimum contacts in the State, and/or intentionally subjected themselves to this jurisdiction through the commission of tortious activity within the State.

8. Venue is proper in the United States District Court for the District of New Mexico pursuant to 28 U.S.C. § 1391, because the acts described in this Complaint occurred in this judicial district.

PARTIES

Plaintiffs

9. Plaintiff, the New Mexico Environment Department (“NMED”) is a state executive agency pursuant to the Department of Environment Act, NMSA 1978, §§ 9-7A-1 to -15. NMED is charged with the administration and enforcement of the New Mexico Hazardous Waste Act (“HWA”) and the Hazardous Waste Management Regulations, 20.4.1-20.4.5 NMAC, and has authority to bring this lawsuit. NMSA 1978, § 74-1-6(A); NMSA 1978, § 74-4-13(A).

10. New Mexico Attorney General Hector Balderas, is the “attorney for the State of New Mexico,” *State ex rel. Norvell v. Credit Bureau of Albuquerque, Inc.*, 1973-NMSC-087, ¶ 5, 85 N.M. 521, and his office is recognized in Article V, Section 1 of the New Mexico Constitution. The New Mexico Legislature has authorized the Attorney General to prosecute and defend, in any court, civil actions in which the State is a party, when, in his judgment, the interest of the State requires such an action. NMSA 1978, § 8-5-2; *State ex rel. Attorney Gen. v. Reese*, 1967-NMSC-172, ¶ 14, 78 N.M. 241, 245, 430 P.2d 399.

11. Plaintiffs bring these claims, in part, pursuant to their authority to guard against adverse environmental and health impacts and risks associated with contamination such as that which is present at Cannon and Holloman.

12. Under Article XX, Section 21 of the New Mexico Constitution, “protection of the state’s beautiful and healthful environment is . . . declared to be of fundamental importance to the public interest, health, safety and the general welfare.” This provision “recognizes that a public trust duty exists for the protection of New Mexico’s natural resources . . . for the benefit of the people of this state.” *Sanders-Reed ex rel. Sanders-Reed v. Martinez*, 350 P.3d 1221, 1225 (N.M. Ct. App. 2015).

Defendants

13. Defendant is the United States of America, including all federal government agencies and departments responsible for the acts alleged in this Complaint.

14. The Department of the Air Force is one of three military departments of the U.S. Department of Defense and is responsible for the administration and operation of the United States Air Force. The Department of the Air Force is and was at all times relevant to this Complaint the owner and operator of Cannon and Holloman.

GENERAL FACTUAL ALLEGATIONS

A. PFAS Background

15. PFAS comprise a family of approximately 3,500 manmade chemicals not found in nature that have been in use since the 1940s. The backbone of a PFAS chemical is a chain of carbon atoms, which may be fully (per) or partly (poly) fluorinated.

16. Due to their ability to repel heat, oil, stains, grease, and water, PFAS are found in a wide array of industrial and consumer products. Companies used PFAS to make, among other things, carpet, clothing, stain-resistant fabrics for furniture, paper packaging for food, and other materials such as cookware that are resistant to water, grease, or stains.

17. The two most recognized members of the PFAS family are PFOS and PFOA, which are long, eight-chain PFAS. PFOS and PFOA easily dissolve in water and thus they are mobile and readily spread in the environment. They are also persistent. PFOS and PFOA have degradation periods of years, decades, or longer under natural conditions and have a half-life in the human body of two to nine years.

18. PFOA and PFOS also readily contaminate soils and leach from soil into groundwater, where they can travel significant distances.

19. PFOS and PFOA are strong, stable, bioaccumulative, and biomagnifying, meaning that they resist degradation due to light, water, and biological processes and tend to accumulate in organisms up the food chain.

20. Further, PFOS and PFOA are toxic, meaning that they pose significant threats to public health and the environment. Exposure to PFOS and PFOA presents health risks even when PFOS and PFOA are ingested at seemingly low levels.

21. PFOS and PFOA exposure is associated with a variety of illnesses, including increased risk in humans of testicular cancer, kidney cancer, thyroid cancer, high cholesterol, ulcerative colitis, and pregnancy-induced hypertension, as well as other conditions. The chemicals are particularly dangerous for pregnant woman and young children.

22. Toxicology studies show that PFOS and PFOA are readily absorbed after oral exposure and are relatively stable once ingested so that they accumulate in individual organs for significant periods of time, primarily the serum, kidney, and liver.

23. Studies further found that individuals with occupational exposure to PFOA run higher risks of bladder and kidney cancer.

24. In studies involving laboratory animals, PFOA and PFOS exposure increased the risk of tumors, changed hormone levels, and affected the function of the liver, thyroid, pancreas, and the immune system.

25. The adverse effects associated with both PFOS and PFOA are additive when both chemicals are present, meaning that their individual adverse effects are cumulative.

26. However, injuries are not sudden and can arise months or years after exposure to PFOS and/or PFOA.

27. PFAS were formally identified as “emerging contaminants” by the U.S. Environmental Protection Agency (“EPA”) in 2014. This term describes contaminants about which the scientific community, regulatory agencies, and the public have an evolving awareness regarding their movements in the environment and effects on public health. PFAS, like other emerging contaminants, are the focus of active research and study, which means new information is released periodically regarding the effects on the environment and human health as a result of exposure to the chemicals.

28. Six PFAS were included by the EPA in the Third Unregulated Contaminant Monitoring Rule per the 1996 Safe Drinking Water Act Amendments in May 2012. Monitoring of these substances was required between 2013 and 2015 to provide a basis for future regulatory action to protect public health.

29. According to the EPA, PFOA and PFOS pose potential adverse effects for the environment and human health. *See, e.g., U.S. EPA, Technical Fact Sheet—Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)* (Nov. 2017), available at https://www.epa.gov/sites/production/files/2017-12/documents/frrrofactsheet_contaminants_pfos_pfoa_11-20-17_508_0.pdf.

30. In January 2009, EPA established a drinking water Provisional Health Advisory (“HA”) level for PFOA and PFOS—two of the PFC compounds about which we have the most toxicological data. EPA set the Provisional HA level at 0.4 parts per billion (“ppb”) for PFOA and 0.2 ppb for PFOS.

31. In 2016, following additional study, the EPA lowered the HA for PFOS and PFOA. EPA established the HA levels for PFOS and PFOA at 70 parts per trillion (“ppt”), or 0.07 micrograms per liter (“ $\mu\text{g}/\text{L}$ ”). In addition, EPA, in issuing its 2016 HAs, directs that when both

PFOA and PFOS are found in drinking water, the *combined* concentrations of PFOA and PFOS should be compared with the 70 ppt HA.

32. In 2018, the Agency for Toxic Substances and Disease Registry (“ATSDR”) released an updated Toxicological Profile for PFAS that revised its minimal risk levels (“MRLs”) for PFOA and PFOS. An MRL is the estimated amount of a chemical a person can eat, drink, or breathe each day without a detectable risk to health. The intermediate oral (15 to 364 days) MRL for PFOA was revised from the previous level of 2×10^{-5} (0.00002) mg/kg/day to 3×10^{-6} (0.000003) mg/kg/day and for PFOS was revised from the previous level of 3×10^{-5} (0.00003) mg/kg/day to 2×10^{-6} (0.000002) mg/kg/day. These new MRLs were lowered because they now take into consideration immune system effects; the former thresholds were based only developmental health effects.

33. The EPA acknowledges that the studies associated with PFAS are ongoing and that based upon additional information, the HAs may be adjusted.

34. Additionally, at least four states, Vermont, California, Minnesota, and New Jersey, have adopted limits or health guidelines on PFAS that are lower than the current EPA HAs.

35. As of July 2018, the New Mexico Water Quality Control Commission voted to add PFOA and PFOS to the list of toxic pollutants the State regulates “at a risk-based level” of 70 ppt, matching the federal level. *See* 20.6.2.3103.A(2) and 20.6.2.7.T(2)(s) NMAC. New Mexico’s Hazardous Waste Bureau, with the Ground Water Quality Bureau, developed the NMED Risk Assessment Guidance for Site Investigation and Remediation, which helps to determine if a site is contaminated to a point that warrants further investigation or action. The associated screening levels and soil screening levels were developed based on the standards found in 20.6.2.3103

NMAC. The Hazardous Waste Bureau uses those screening levels in its administration of the HWA and the Hazardous Waste Management Regulations.

36. Additional PFAS for which there are currently less scientific information include: Perfluorohexane sulfonic acid (“PFHxS”); Perfluorooctane sulfonamide (“PFOSA”); Perfluorononanoate acid (“PFNA”); Perfluorododecanoic acid (“PFDoA”); and Perfluorobutanesulfonic acid (“PFBS”).

37. While more studies have been conducted and thus more is known regarding PFOS and PFOA, all PFAS have generally demonstrated similar characteristics to PFOS and PFOA.

38. By 2015, PFOA was voluntarily phased out of production by the major manufacturers. However early studies of the replacement PFAS indicate they are nearly as harmful. There are still some applications of traditional PFOA and PFOS and the chemicals are persistent in pre-existing products made prior to the phaseout.

B. PFAS in AFFF Used at Bases

39. In the 1960s, 3M Company and the U.S. Navy developed “aqueous film-foaming foam” (“AFFF”), a firefighting foam containing PFOS and PFOA. AFFF concentrate contains fluorochemicals used to meet required performance standards for fire extinguishing agents.

40. In the 1970s, military sites, civilian airports, and firefighting training centers began using AFFF worldwide.

41. The United States Air Force began purchasing and using AFFF-containing PFAS for firefighting training activities and petroleum fire extinguishment in 1970.

42. AFFF was primarily used on Air Force installations at fire training areas, but may have also been used, stored, or released from hangar fire suppression systems, at firefighting

equipment testing and maintenance areas, and during emergency response actions for fuel spills and mishaps.

43. A 1980s study by the U.S. Navy found that AFFF has “adverse effects environmentally” and kills aquatic life.

44. As early as 2011, the U.S. Department of Defense acknowledged that there was a PFAS crisis among its facilities. An internal study identified 594 military sites that were likely to have contaminated groundwater, although it was noted that this number may underestimate the problem by not including AFFF spills, pipeline leaks, or aircraft hangar fire suppression systems.

45. In March 2018, the military acknowledged that PFAS were present at 121 military sites and suspected at hundreds of others. At least 564 drinking water supplies in communities near military sites have PFAS levels that exceed EPA’s HA.

46. The USAF is working to replace its current inventory of AFFF with more formations based on shorter carbon chains, such as Phos-Chek, a six-carbon chain (“C6”) based foam that does not contain PFOS.

47. C6 PFAS are the most prominent replacements for traditional eight-carbon chain PFAS as they are thought to degrade faster. DuPont, one of the major consumers and producers of PFOA, has a spinoff company, Chemours, that manufactures the most well-known C6 product known as GenX.

48. C6 products are still PFAS and presents similar health and environmental concerns to longer-chain PFAS. In May 2015, 200 scientists signed the Madrid Statement, “which expresses concern about the production of all fluorochemicals, or PFAS, including those that have replaced PFOA. PFOA and its replacements are suspected to belong to a large class of artificial compounds called endocrine-disrupting chemicals; these compounds, which include chemicals used in the

production of pesticides, plastics, and gasoline, interfere with human reproduction and metabolism and cause cancer, thyroid problems and nervous system disorders.” A. Blum et al., *The Madrid Statement on Poly-and Perfluoroalkyl Substances (PFASs)*, ENVIRON. HEALTH PERSPECT. 123:A107–A111 (2015), available at <http://dx.doi.org/10.1289/ehp.1509934>.

49. To the extent the Air Force intends to utilize this alternative, its use must similarly be compliant with applicable statutes and common laws that are protective of human health and the environment.

C. PFAS Contamination at New Mexico Air Force Bases

Cannon Air Force Base

50. Cannon is located in eastern New Mexico, near the city of Clovis. Cannon encompasses approximately 3,789 acres of land owned by the United States and hosts a population of roughly 7,800 people.

51. Clovis, New Mexico is a city with a population of approximately 39,000 that relies upon the Ogallala Aquifer for its potable water.

52. Cannon includes two perpendicular active runways in the central and southwest portions; maintenance, support, and operational facilities west of the central runway/flightline; supplemental hangars and apron areas in the south-central region; a wastewater treatment plant to the east; and a golf course and residential and service facilities in the northwest portion.

53. Adjacent land to Cannon includes mixed-use land utilized as residential, agricultural, and farmland to the north; agricultural and farmland to the east and south; and agricultural and open grassland to the west.

54. Cannon is an active military installation that currently houses the 27th Special Operation Wing, which conducts sensitive special missions including close air support, unmanned aerial vehicle operations, and non-standard aviation in response to the Secretary of Defense.

55. Cannon was developed in 1929 when Portair Field was established as a civilian passenger terminal. The Army Air Corps acquired control of the facility in 1942, and it became known as the Clovis Army Air Base. Clovis Army Air Base operated as an installation for aviation, bombing, and gunnery training until 1947 when the facility was deactivated. The Base was reactivated as Clovis Air Force Base in 1951 and became a permanent military installation in June 1957, when it was renamed Cannon Air Force Base.

56. Defendants have used AFFF at Cannon for more than fifty years in training and actual firefighting events at the base. During routine training exercises, AFFF was sprayed directly on the ground and/or tarmac at several fire training areas, allowing PFOA and PFOS to travel to the surrounding groundwater, causing contamination on and offsite. PFAS remains at very high concentrations in groundwater both on and off the base.

57. In addition to routine training for personnel, additional releases of PFAS-containing AFFF have occurred at Cannon through testing of the equipment, false alarms, equipment malfunctions, and other incidental releases in the hangars, fire stations, and other locations. Once the AFFF-containing PFAS was released into the environment, the contamination migrated off-site.

58. On July 26, 2017, Defendants provided NMED with a “*Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas Environmental Programs Worldwide Installation-Specific Work Plan*” for Cannon (“Cannon SI Work Plan”). The provision of this report to NMED was described “as a courtesy” in a July 27, 2017 letter to NMED.

59. The purpose of the Cannon SI Work Plan was to identify locations where PFAS may have been used and released into the environment and to provide an initial assessment of possible migration pathways and receptors of potential contamination.

60. The Cannon SI Work Plan identified thirteen AFFF release areas that were recommended for site investigation, although it did not preclude the presence of PFAS contamination at other areas throughout the site. The following areas are known to have confirmed releases of AFFF:

- a. **Former Fire Training Area (“FTA”) No. 2**—Former FTA No. 2 is located in the southeast corner of Cannon, approximately 1,000 feet south of the active FTA, and was used for fire training exercises from approximately 1968 to 1974. The area includes two round depressions in the land surface, each measuring approximately 100 feet in diameter. Fire training exercises were conducted twice per quarter using approximately 300 gallons of the unused jet propellant JP-4. No specific AFFF use was reported at Former FTA No. 2; however, since the FTA operated after initial use of AFFF at the base, it is likely that AFFF was used at this location.
- b. **Former FTA No. 3**—Former FTA No. 3 is located in the southeast corner of the base, approximately 800 feet southeast of the active FTA, and was used concurrently with FTA No. 2 between approximately 1968 and 1972. Training exercises were conducted twice per quarter in an unlined, half-moon shaped area approximately 100 feet in length. No specific use of AFFF at Former FTA No. 2 was recorded; however, since the FTA operated after initial use of AFFF at the base, it is likely that AFFF was used at this location.
- c. **Former FTA No. 4**—Former FTA No. 4 was used form 1974 through 1995 for fire training exercises. Training activities were conducted twice per quarter, during which an unknown volume of AFFF was used. FTA No. 4 consisted of an unlined circular area approximately 400 feet in diameter with a mock aircraft located in the center. Prior to 1985, the jet propellant JP-4 and AFFF runoff generated during fire training exercises collected in an unlined pit. The pit was backfilled in 1985 and a new, lined pit with an oil/water separator was installed to handle collected runoff. The oil/water separator was subsequently removed in 1996.
- d. **Hangar 119**—General storage warehouse hangar located in the west central portion of the base, west of the flight apron, with three accidental AFFF releases. The first incident occurred in September 2006 when approximately 60 gallons of AFFF discharged into a storm drain after the AFFF system was accidentally activated, possibly due to a corroded valve. The second incident occurred in September 2012 when a “significant amount” of AFFF was discharged into bay number one and flowed onto asphalt on the north side of the structure between Hangar 119 and Building 102. Incident reports indicate that a “huge

amount" of AFFF entered a storm drain while the rest was left to evaporate. The third incident occurred in July 2013 when an unknown quantity of AFFF was discharged onto the concrete flight ramp outside of the bays, which convey liquid directly to the South Playa Lake. Due to the large quantity of AFFF released at Hangar 119, there is the potential that AFFF migrated to grassy areas to the south and southwest of the structure.

- e. **Hangar 133**—Small aircraft hangar located in the west central portion of the base, immediately south of Hangar 119, with two additional AFFF releases. Several hundred gallons of AFFF were released during a scheduled rinsing of the hangar fire system in December 2000 and entered a nearby storm drain. Approximately 200 gallons of AFFF were released into a hangar bay following a power outage in July 2001. Most of the AFFF entered a floor trench and was routed to the wastewater treatment plan ("WWTP"); however, AFFF that did not enter the floor trench was washed into nearby infield soil and allowed to evaporate.
- f. **Former Sewage Lagoon**—The former sewage lagoons consisted of two unlined surface impoundments that were used from 1966 to 1998 and received sanitary and industrial waste from base facilities prior to the construction of the WWTP. The former sewage lagoons would have received any AFFF that entered the sanitary sewer system from 1966 to 1998. Documented releases of AFFF to the sanitary system from Hangars 199 and 208 were reported prior to and during 1998. As such, there is evidence that AFFF was released to the environment at the former sewage lagoons.
- g. **North Playa Lake Outfall**—North Playa Lake, located southeast of the WWTP, received all Cannon sanitary and industrial wastewater from 1943 to 1966. Currently, all treated effluent from the WWTTP is released primarily to North Playa Lake with a portion also released to the golf course for irrigation. Since there is no accepted wastewater treatment process for PFAS, any wastewater collected at the WWTP containing PFAS would be passed on to North Playa Lake.
- h. **South Playa Lake Outfall**—South Playa Lake is located in the southwestern portion of Cannon and serves as the base's primary stormwater collection point. The lake has received stormwater runoff from portions of the flightline area since 1943. Solvents, fuels, oils, greases, and AFFF are all potential contaminants that would have discharged to the lake from the flightline area. Documented releases of AFFF in the hangars resulted in AFFF entering storm drains with liquid being subsequently routed to South Playa Lake.
- i. **Hangar 109**—Parking and general maintenance hangar located in the west central portion of Cannon, with two accidental AFFF releases. The first release occurred in December 1999 when an office fire activated the AFFF fire suppression system, releasing approximately 500 gallons of AFFF in the hangar bay that reportedly entered the floor trench and was routed to the WWTP. No AFFF was reportedly released outside the hangar in 1999. A second release of approximately twenty-five gallons of AFFF solution occurred in 2016. Installation personnel identified that AFFF was released outside the hangar and was allowed to evaporate west and southwest of the hangar.

- j. **Active FTA**—Active FTA located in the southeast portion of Cannon, immediately northwest of FT-07, FT-08, and FTA-4. The FTA became operational in 1997 and consists of a circular lined burn pit with a mockup of a large aircraft, a propane fuel tank, a control panel, and a lined evaporation pond. Fire training exercises are conducted at the active FTA approximately monthly using water or AFFF. The fire department also conducts annual vehicle foam checks at the FTA. Liquids discharged into the lined burn pit, including water and AFFF, drain to the lined evaporation pond located approximately 300 feet southwest of the pit and are left to evaporate. The liner of the evaporation pit has required repairs in the past, and breaches in the liner have allowed AFFF to infiltrate the soils beneath the liner. Additionally storms in May 2015 resulted in significant flash flooding across Cannon, which likely resulted in any residual AFFF located in the evaporation basin to overflow and be released in the surrounding environment.
- k. **Landfill #4**—Closed landfill covering approximately 7 acres in the east central portion of Cannon that was only operational for one year between 1967 and 1968. The landfill received domestic and industrial wastes including solvents, paints, thinners, and waste oils. Disposal activities consisted of placing waste material into a trench, burning the accumulated waste, and then covering the burned material with soil. Due to the period of operation, AFFF would not have been included in landfilled refuse; however, the landfill cover was revegetated and used water from North Playa Lake, located immediately south of Landfill #4, which receives treated effluents from the WWTP.
- l. **Perimeter Road Fuel Spill**—A fuel tanker truck overturned while traveling along Perimeter Road in the southeast corner of the base. All fuel from the tanker was released on the southeast side of the road. The fire department responded with crash trucks and reportedly sprayed AFFF on the fuel spill. The response was conducted over several days with multiple fire trucks discharging the entire supply of AFFF on the release. Contaminated soils were excavated, but the excavation depth is unknown.
- m. **Flightline Crash Areas**—Three aircraft crashes have occurred along the flightline where the fire department responded with the use of AFFF. Two incidents involving F-16 aircraft were identified at the southern end of the flightline, and a third incident involving an F-111 aircraft occurred at the north end of the flightline. No information regarding the amount of AFFF released is known at this time.
- n. **Whispering Winds Golf Course Outfall**—The base golf course began receiving a portion of treated effluent from the WWTP to fill ponds and irrigate the greens in approximately 2002. The golf course is irrigated five nights per week for approximately four hours using a sprinkler system. Any wastewater collected at the WWTP containing AFFF therefore could be released at the golf course.
- o. **Hangar 204**—Hangar 204 was identified as an area for additional investigation due to the release of AFFF outside the structure; however, it was determined during a scoping visit that based on surface topography surrounding the hangar, any AFFF released from hangar doors would drain directly to storm drains in the apron or would evaporate on the concrete apron. Any AFFF that entered the storm drain would have been routed to South Playa

Lake. Infiltration of AFFF into soils in the vicinity of Hangar 204 was thus thought to be unlikely and, therefore, it was removed from further investigation.

61. In August 2018, Cannon submitted a “*Final Site Investigation Report, Investigation of Aqueous Film Foaming Foam Cannon Air Force Base, New Mexico*” to NMED (“Cannon SI Report”). As stated in the Cannon SI Report, exceedances of the EPA’s HA of 70 ppt for groundwater were detected in six of the eighteen environmental restoration program monitoring wells at the base.

62. Fourteen AFFF release areas at Cannon were analyzed for PFAS contamination in the soil and groundwater. PFOS and PFOA concentrations in soil and sediment were compared against the regional screening level (RSL) of 0.126 mg/kg. Groundwater concentrations for PFOA and PFOS, or PFOA and PFOS combined, were compared against the EPA’s HA of 70 ppt.

63. At Former FTA No. 3, PFOS was detected above the RSL in the surface sample at 0.24 mg/kg, nearly twice the RSL.

64. At Former FTA No. 4., PFOS was detected above the RSL in the surface soil samples at each of the three locations with the highest detected concentration being 0.61 mg/kg, nearly five times the RSL.

65. At Hangars 119 and 113, PFOS was detected above the RSL at each location with the highest detected concentration being 0.42 mg/kg, more than three times the RSL.

66. At the Former Sewage Lagoons, PFOS was detected above the RSL at two subsurface sample sites with the highest detected concentration being 0.29 mg/kg, more than twice the RSL.

67. At the North Playa Lake Outfall, PFOS and PFOA combined were detected above the HA values at both surface water sample sites, with the highest detected combined value being 0.123 µg/L, nearly two times the HA.

68. At Hangar 109, PFOS was detected above the RSL at a maximum concentration of 0.23 mg/kg, nearly twice the RSL.

69. At the Active FTA, PFOS was detected above the RSL at a surface soil location at a concentration of 1.1 mg/kg, more than eight times the RSL, the highest of all soil samples on the base.

70. Two locations, Landfill #4 and Flightline Aircraft Crashes, were presented in the Basewide Groundwater Sampling. PFOS was detected basewide above the HA at five sample sites with a maximum detected concentration of 24 µg/L, 342 times the HA. PFOA was detected above the HA at four sample sites with a maximum detected concentration of 3.1 µg/L, forty-four times the HA. PFOS and PFOA combined exceeded the HA at six sample sites with the maximum concentration of 26.2 µg/L, 374 times the HA.

71. Notably, because these compounds are persistent and bioaccumulative, any detectable amount that can be ingested, regardless of whether or not it exceeds the HA or RSLs, will add to the lifetime concentration of PFAS in any given individual.

72. NMED learned in late 2018 that following a preliminary assessment in 2015 and a scoping visit in 2016, the Air Force collected samples at four of its public supply wells in 2016, at fourteen potential PFAS release sites in 2017, and at off-base private water supply wells in 2018. The Air Force test results documented high concentrations of PFAS compounds in both on- and off-base groundwater. Sampling has detected PFAS in some off-base wells, which provide drinking water and livestock and irrigation water to local dairies, including the Highland Dairy, half of a mile south and slightly east of Cannon. Air Force sampling showed a maximum of 539 ppt for PFOA in the Highland Dairy well (7.7 times the EPA HA), and Highland Dairy's own

sampling showed 2,920 PFOA (nearly 42 times the HA), with a total PFOS/PFOA of 14,320 ppt in an irrigation well (more than 204 times the HA).

73. The Air Force itself has determined that the “presence [of PFOS and PFOA at Cannon] in drinking water at levels above the EPA [HAs] poses an imminent and substantial danger to public health or welfare,” and notified NMED of this determination via letter on January 10, 2019.

74. On September 26, 2018 NMED sent a letter confirming that a teleconference with the Air Force on August 13, 2018, in which the State noted that the detection of PFAS compounds in groundwater exceeding the HA counted as “a notifiable discharge even if the specific date, sources and volumes of the discharge are not yet known.” The Air Force provided a formal notice of the discharge event to NMED on August 14, 2018.

75. NMED advised that the Cannon SI Report that was submitted August 27, 2018 would count as an Interim Corrective Action report subject to several conditions as well as additional corrective actions.

76. The Air Force responded to NMED’s September 26 letter on October 26, 2018, and declined to make the revisions requested by NMED.

Holloman Air Force Base

77. Holloman is located in Otero County near the city of Alamogordo. The base covers approximately 59,800 acres and hosts a population of roughly 21,000.

78. Alamogordo, New Mexico is a city with a population of approximately 31,000 people who rely partially upon groundwater in the Tularosa Basin for potable water.

79. Holloman, formerly known as Alamogordo Army Air Field, was initiated as a wartime temporary facility in 1942. In March 1947, after a brief inactivation at the end of World

War II, the installation was transferred to the Air Material Command with the mission of providing facilities and testing of pilotless aircraft, guided missiles, and allied equipment in support of the Air Material Command Research and Development Program. The base was renamed Holloman Air Force Base in 1948.

80. Holloman is currently home of the 49th wing of the Air Combat Command, 96th Test Group, 54th Fighter Group, and the German Air Force Flying Training Center. Operations at Holloman include missile testing, aircraft and pilot training, operational equipment and systems testing, and aircraft maintenance and storage.

81. In 2015, the “*Final Preliminary Assessment Report for Perfluorinated Compounds at Holloman Air Force Base, Alamogordo, New Mexico*” identified thirty-one potential PFAS release areas at Holloman. The Preliminary Assessment was provided to NMED as part of the EPA’s Health Advisory proceedings.

82. In November 2018, Defendants released the “*Final Site Inspection of Aqueous Film Forming Foam (AFFF) Release Areas Environmental Programs Worldwide*” for Holloman. (“Holloman SI Report”).

83. The Holloman SI Report detailed five AFFF release areas, but did not rule out the possibility that releases had occurred elsewhere at the site:

- a. **Former FTA**—Fire training activities were conducted generally at the Former FTA since 1942, although the exact dates of fire training in this area is unknown. Fire training was conducted in two unlined burn pit areas within the Former FTA. The volume of AFFF used during each training exercise is unknown. Fire training activities continued at this location until 1990 when training exercises were moved to the current FTA.
- b. **Sewage Lagoon Area Outfall**—Prior to construction of a WWTP in 1996, wastewater from Holloman was discharged directly into the sewage lagoon area that was comprised of seven unlined lagoons. Approximately 1.2 million gallons of domestic and industrial wastewater were discharged into the sewage lagoon daily.

- c. **Apache Mesa Golf Course Outfall**—In 2011, the golf course began receiving a portion of the effluent from the WWTP to fill two golf course ponds and irrigate greens. Releases of AFFF from within the industrial shops and Holloman would be routed through the WWTP and eventually lead to the water holding tank at the Apache Mesa Golf Course.
- d. **Lake Holloman Outfalls**—Wastewater from Holloman was discharged directly into the sewage lagoon area and eventually to Lake Holloman prior to construction of the WWTP in 1996.
- e. **Evaporation Pond No. 2**—The evaporation basin was installed in 1991 and currently collects all discharges containing AFFF, routed through hangar bay floor drains from hangars located in the western ramp area of the West Hangar Group. The Holloman Fire Department uses this basin for monthly AFFF tests and firehose washouts. AFFF is reportedly sprayed from vehicles into the pond until a consistent flow pattern is established.

84. The Former FTA (FT-31), the Sewage Lagoon Area Outfall, the Apache Mesa Golf Course Outfall, the Lake Holloman Outfalls, and Evaporation Pond No. 2 release areas were analyzed for PFAS contamination in the soil, sediment, surface water, and groundwater. PFOS and PFOA concentrations in soil and sediment were compared against the RSL of 0.126 mg/kg. Groundwater concentrations for PFOA and PFOS, or PFOA and PFOS combined were compared against the EPA HA of 70 ppt.

85. Six surface soil samples, including one duplicate, and six subsurface soil samples, including one duplicate, from a total of five locations, were taken and analyzed for PFAS at the Former FTA (FT-31). The soils were analyzed for PFOA and PFOS, with each being detected at each sample site. PFOS was detected above the RSL more than half the time with the highest concentration exceeding the 0.126 mg/kg RSL at 1.13 mg/kg, nearly nine times the limit. At the three groundwater sample sites at FT-31, PFOS, PFOA, and PFOA and PFOS combined were detected well above the EPA HA of 0.07 µg/L, with the highest concentrations being 48.4 µg/L (691 times the HA), 254 µg/L (3,628 times the HA), and 302.4 µg/L (4,314 times the HA), respectively.

86. At the Sewage Lagoon Area Outfall, groundwater results at three locations revealed PFOS, PFOA, and PFOS and PFOA combined all exceeding EPA's HA. The surface water sample also revealed PFOS, PFOA, and combined concentrations exceeding the HA.

87. One groundwater, two sediment, two surface water, and two effluent samples were taken at the Apache Mesa Golf Course Outfall. PFOA and PFOS combined were detected above the HA in the groundwater sample with a maximum concentration of 0.1371 µg/L, nearly twice the HA. PFOS, PFOA, and PFOS and PFOA combined exceeded the HA at both of the surface water sample locations, with the highest concentration of 1.317 µg/L. Likewise, PFOS, PFOA, and the two combined exceeded the HA in both of the effluent samples with the highest concentration of 0.995 µg/L, fourteen times the HA.

88. Sediment and surface water samples were taken at Lake Holloman Outfalls. PFOS was detected in sediment above the RSL at 0.519 mg/kg, four times the RSL. The surface water samples each had concentrations of PFOS, PFOA, and PFOS and PFOA combined that exceed the EPA HA, with the maximum concentration of PFOS and PFOA combined at 3.188 µg/L, forty-five times the HA.

89. Finally, soil and groundwater were analyzed at Evaporation Pond No. 2. PFOS was detected above the RSL at the surface and subsurface intervals for each of the soil samples with a maximum concentration of 5.71 mg/kg, the highest of all soil samples for Holloman and forty-five times the RSL. PFOA was also detected above the RSL at the surface level for each sample. PFOS, PFOA, and PFOS and PFOA combined were detected above the HA in the groundwater sample with a maximum PFOS and PFOA combined concentration of 1066.6 µg/L, more than 15,000 times the HA and the highest of all groundwater samples at the base.

90. Sampling at both Cannon and Holloman is ongoing in an effort to more fully characterize the extent of the groundwater contamination plumes and their migration outside of the site boundaries.

STATUTORY AND REGULATORY BACKGROUND

91. Congress enacted the Resource Conservation and Recovery Act (“RCRA”) in 1976 in response to “a rising tide of scrap, discarded, and waste materials” that had become a matter of national concern. 42 U.S.C. § 6901(a)(2), (4) (1984). In enacting RCRA, Congress declared it a national policy “that, where feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment.” 42 U.S.C. § 6902(b).

92. Congress recognized, however, that the “collection of and disposal of solid wastes should continue to be primarily the function of the State, regional, and local agencies. . . .” 42 U.S.C. § 6901(a)(4). Thus, RCRA allows any state to administer and enforce a hazardous waste program subject to authorization from the EPA. 42 U.S.C. § 6926(b).

93. RCRA includes a clear and unambiguous waiver of sovereign immunity:

Each [federal entity] engaged in [disposal or management of hazardous waste] shall be subject to, and comply with, all Federal, State, interstate, and local requirements, both substantive and procedural (including any requirement for permits or reporting or any provisions for injunctive relief and such sanctions as may be imposed by a court to enforce such relief), respecting control and abatement of solid waste or hazardous waste disposal and management in the same manner, and to the same extent, as any person is subject to such requirements. . . . The United States hereby expressly waives any immunity otherwise applicable to the United States with respect to any such substantive or procedural requirement (including, but not limited to, any injunctive relief, administrative order or civil or administrative penalty or fine . . .).

42 U.S.C. § 6961.

94. EPA authorized New Mexico's state program pursuant to RCRA in 1985, 40 C.F.R. § 272.1601(a), and delegated to New Mexico "primary responsibility for enforcing its hazardous waste management program." 40 C.F.R. § 272.1601(b). New Mexico's HWA and regulations promulgated pursuant to it are incorporated by reference into RCRA. 40 C.F.R. § 272.1601(c)(1).

95. The purpose of New Mexico's HWA is to "ensure the maintenance of the quality of the state's environment; to confer optimum health, safety, comfort and economic and social well-being on its inhabitants; and to protect the proper utilization of its lands." § 74-4-2.

96. Pursuant to the HWA, NMED is authorized to issue permits, § 74-4-4.2(C), and must deny them if an applicant has made a material misrepresentation or has violated any provision of the HWA, among other reasons. § 74-4-4.2(D).

97. NMED may bring suit in the appropriate district court to immediately restrain any person, including any past or present generator, past or present transporter, or past or present owner or operator of a treatment, storage, or disposal facility, who has contributed to or is contributing to the past or current handling, storage, treatment, transportation, or disposal of solid waste or hazardous waste or the condition or maintenance of a storage tank that may present an imminent and substantial endangerment to health or the environment. § 74-4-13.

98. The HWA § 74-4-3(K) defines "hazardous waste" as:

[A]ny solid waste or combination of solid wastes that because of their quantity, concentration or physical, chemical or infectious characteristics may:

- (1) cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or
- (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported,

disposed of or otherwise managed. ‘Hazardous waste’ does not include any of the following, until the board determines that they are subject to Subtitle C of the federal Resource Conservation and Recovery Act of 1976, as amended, 42 U.S.C. 6901 et seq.: drilling fluids, produced waters and other wastes associated with the exploration, development or production of crude oil or natural gas or geothermal energy; fly ash waste; bottom ash waste; slag waste; flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels; solid waste from the extraction, beneficiation or processing of ores and minerals, including phosphate rock and overburden from the mining of uranium ore; or cement kiln dust waste.

99. New Mexico’s Legislature has granted wide latitude to its environmental programs in order to ensure protection of its natural resources. New Mexico’s Environmental Protection Regulations and the rulemaking procedures thereunder are to be “liberally construed to carry out their purpose.” 20.1.1.108 NMAC.

CAUSE OF ACTION

First Cause of Action: Violation of the New Mexico Hazardous Waste Act

100. All allegations above are incorporated herein as if specifically set forth at length.
101. Defendants are a “person” under NMSA § 74-4-3(M).
102. PFAS, as described herein, are discarded materials and each is a “solid waste” as defined under the HWA, NMSA § 74-4-3(O), and a “hazardous waste” as defined under NMSA § 74-4-3(K).
103. As a result of the releases of PFAS and other hazardous wastes at Cannon and Holloman as described herein, Defendants have contributed to and will continue to contribute to the past and present handling, storage, treatment, transportation, and/or disposal of solid or hazardous waste which has or may present an imminent and substantial endangerment to health and/or the environment in violation of the HWA, § 74-4-13.

104. Conditions at Cannon and Holloman, as described herein, have presented or may present an imminent and substantial endangerment to health and/or the environment via continued migration of contamination in groundwater and/or drinking water at and around the Bases. In addition to natural resources throughout the environment, members of the public and those living in or visiting surrounding areas are or will be directly exposed to contaminants through all pathways of migration.

105. Although Defendants have acknowledged that the presence of PFOA and PFOS presents an imminent and substantial danger at Cannon, Defendants have declined to take remedial action required under the law.

106. By reason of the foregoing acts and omissions of Defendants, the State is entitled to an order for such relief as may be necessary to remedy the results of Defendants' conduct. Such relief includes but is not limited to injunctive relief compelling Defendants to take all steps necessary to achieve permanent and consistent compliance with the HWA.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff, the State of New Mexico, respectfully requests that the Court enter judgment in its favor and against Defendants by granting relief as follows:

- a. An order declaring that Defendants' conduct violated the HWA;
- b. Immediate injunctive relief requiring the abatement of ongoing violations of the HWA, abatement of the conditions creating an imminent and substantial endangerment, and to fund any costs associated with each compliance whether incurred by the State or third parties performing abatement;
- c. A permanent injunction directing Defendants to take all steps necessary to achieve permanent and consistent compliance with HWA;
- d. All available civil penalties under applicable statutes;

- e. The payment for past costs incurred by the State and not yet reimbursed by the Defendants in connection with its oversight and efforts to obtain compliance with the HWA in this matter;
- f. A declaratory judgment providing the State with a mechanism for reimbursement of future costs incurred by the State in connection with its oversight and efforts to monitor compliance with the HWA in this matter;
- g. A judgment awarding the State costs and reasonable attorneys' fees incurred in prosecuting this action, together with prejudgment interest, to the full extent permitted by law; and
- h. A judgment awarding the State such other relief as may be necessary, just, or appropriate under the circumstances.

Dated: March 4, 2019

Respectfully submitted:

**HECTOR H. BALDERAS
NEW MEXICO ATTORNEY GENERAL**

/s/ P. Cholla Khoury

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**NEW MEXICO ENVIRONMENT
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Counsel for Plaintiff the State of New Mexico



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
SAGINAW BAY DISTRICT OFFICE



C. HEIDI GRETHER
DIRECTOR

January 16, 2018

CERTIFIED MAIL: 7011 1570 0001 9652 3129

Mr. Benjamin Marrs, PG, REM
BRAC Program Management Division
United States Department of the Air Force
Air Force Civil Engineer Center
Building 1, 3515 South General McMullin Avenue
San Antonio, Texas 78226

Dear Mr. Marrs:

SUBJECT: Violation Notice No. VN-007964
Substantive Requirements Document (SRD) No. MIU990027
Designated Name: USAF-Wurtsmith AFB

The Michigan Department of Environmental Quality (MDEQ), Water Resources Division (WRD), has determined that the United States Department of the Air Force (USAF)-Wurtsmith Air Force Base (AFB) is in violation of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.3101 *et seq.*, and the administrative rules promulgated thereunder being 2006 AACs R 323.2101 *et seq.*, as amended; and SRD No. MIU990027, which was signed October 7, 2016.

As you are aware, the USAF-Wurtsmith AFB was required, by December 31, 2017, to have provided multi-stage activated carbon treatment, or another treatment methodology, on groundwater pumped from the existing Arrow Street and Benzene Plant pump and treat systems for purpose of remediation of per- and polyfluoroalkyl substances (PFAS). The need to comply with the SRD was previously discussed in letters from Ms. Christine Alexander, WRD, dated August 2, 2017, and Ms. Teresa Seidel, WRD, dated November 3, 2017. The letters specifically identified the need to install the treatment systems and rejected a request by the USAF to rescind SRD No. MIU990027. To date, no such treatment system has been installed.

The MDEQ appreciated the face-to-face meeting with you on December 5, 2017, and the telephone conversation our Lansing WRD staff had with you and Mr. Stephen Termaath on January 2, 2018. Those conversations were helpful in understanding the overall plan and timing for a central treatment facility that will include the existing Arrow Street and Benzene Plant treatment systems with flows of 500 gallons per minute (gpm) and an expected project completion of July 2018. We understand the central treatment system will be designed in a manner that allows for expansion and will incorporate the Mission Street facility and additional contaminated groundwater flows up to 1,000 gpm.

The violations identified in this Violation Notice are violations of Part 31 of the NREPA and SRD No. MIU990027. The USAF-Wurtsmith AFB should continue to take immediate action to achieve and maintain compliance with the terms and conditions of Part 31 and the SRD.

Mr. Benjamin Marrs
Page 2
January 16, 2018

Please submit a response to this letter by January 31, 2018. At a minimum, the response shall include:

1. Submit final construction drawings by March 1, 2018.
2. Commence construction by March 15, 2018.
3. Complete construction and initiate treatment operation by July 15, 2018.
4. The central treatment system shall be operational by August 1, 2018. If the central treatment system is not operational by August 1, 2018, the USAF-Wurtsmith AFB shall install a temporary treatment system prior to this date for the Arrow Street and Benzene Plant pump and treat systems.
5. The USAF-Wurtsmith AFB shall provide updated details, including written monthly status reports regarding the time frame and installation of the central treatment system that was discussed with the MDEQ.

If you have any factual information you would like us to consider regarding the violations identified in this Violation Notice, please provide them with your written response.

We appreciate your cooperation in resolving this matter. Should you require further information regarding this Violation Notice or if you would like to arrange a meeting to discuss it, please contact me at silerm@michigan.gov; or 989-439-3461.

Sincerely,



Matthew Siler
Saginaw Bay District Office
Water Resources Division

cc: General Joseph L. Lengyel, Chief, National Guard Bureau
Major General Gregory Vadnais, Director and Adjutant General, Department of Military and Veterans Affairs
Dr. Stephen Termaath, Air Force Civil Engineer Center
Ms. Paula Bond, P.G., Aerostar SES, LLC
Mr. Mike Zimmer, Governor's Office
Ms. C. Heidi Grether, Director, MDEQ
Ms. Sue Leeming, External Relations Deputy Director, MDEQ
Mr. Michael McClellan, Environment Deputy Director, MDEQ
Ms. Teresa Seidel, MDEQ



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



C. HEIDI GRETHER
DIRECTOR

October 19, 2018

CERTIFIED MAIL

Mr. Benjamin Marrs, PG, REM
BRAC Program Management Division
United States Department of the Air Force
Air Force Civil Engineer Center - Building 1
3515 South General McMullin Avenue
San Antonio, Texas 78226

Dear Mr. Marrs:

SUBJECT: Violation Notice No. VN-008900
Substantive Requirements Document (SRD) No. MIU990034
Designated Name: USAF-Wurtsmith AFB

The Michigan Department of Environmental Quality (MDEQ), Water Resources Division (WRD), has determined that the USAF-Wurtsmith AFB is in violation of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.3101 *et seq.*; the administrative rules promulgated thereunder being 2006 AACs R 323.2101 *et seq.*, as amended; and SRD No. MIU990034, which was signed on April 15, 2016.

A review of groundwater data from compliance monitoring wells located in the area of Clark's Marsh document PFOS levels far exceeding the 12 nanograms per liter (ng/l) PFOS water quality standard at the groundwater surface water interface (GSI). Failure to meet water quality standards for discharges of venting groundwater is a violation of Section 3109(a) and other sections of Part 31; excerpt is below. The MDEQ has also determined that the discharge of venting groundwater is not in compliance with Part 201, Environmental Remediation, of the NREPA.

Section 324.3109a. Mixing zones for discharges of venting groundwater; conditions not requiring permit; definitions.

(1) Notwithstanding any other provision of this part, or rules promulgated under this part, the department shall allow for a mixing zone for discharges of venting groundwater in the same manner as the department provides for a mixing zone for point source discharges. Mixing zones for discharges of venting groundwater shall not be less protective of public health or the environment than the level of protection provided for mixing zones from point source discharges.

(2) Notwithstanding any other provision of this part, if a discharge of venting groundwater is in compliance with the water quality standards provided for in this part and the rules promulgated under this part, a permit is not required under this part for the discharge if the discharge is provided for in either or both of the following:

(a) A remedial action plan that is approved by the department under part 201.

(b) A corrective action plan that is submitted to the department under part 213 that includes a mixing zone determination made by the department and that has been noticed in the department calendar.

(3) As used in this section:

(a) "Mixing zone" means that portion of a water body where a point source discharge or venting groundwater is mixed with receiving water.

(b) "Venting groundwater" means groundwater that is entering a surface water of the state from a facility, as defined in section 20101.

The WRD identified the following groundwater PFOS concentrations that indicate exceedances of the GSI in Clark's Marsh.

Sample Type	Data Source	Sample Date	PFOS (ng/l)
FT02-MW9	USAF	2016	42,000
FT02-MW8D	USAF	2016	39,000
FT02-MW7D	USAF	2016	29,000
FT02-MW8S	USAF	2016	12,000
FT02-MW6S	USAF	2016	8,800
FT02-MW4D	USAF	2016	8,300
FT02-MW5	USAF	2016	7,400
FT02-MW5	USAF	2017	4,060
FT02-MW6D	USAF	2016	6,100
FT02-MW4S	USAF	2016	1,200
FT02-MW7S	USAF	2016	100

In this instance, pore water further supports that there are exceedances of water quality standards in venting groundwater to Clark's Marsh.

Sample Type	Data Source	Sample Date	PFOS (ng/l)
PW CM 02	MDEQ	9/4/2018	6,240
PW CM 04	MDEQ	9/4/2018	3,810
PW CM 05	MDEQ	9/4/2018	2,120
PW CM 03	MDEQ	9/4/2018	994
PW CM 01	MDEQ	9/4/2018	146
PW CM 06	MDEQ	9/4/2018	42.2

In addition, concentrations of PFOS in surface waters in the Clark's Marsh area exceed water quality standards, ranging from 83 ng/l to 1,410 ng/l.

The violations identified in this Violation Notice are continuing and are violations of Part 31 and SRD No. MIU990034.

The USAF-Wurtsmith AFB should take immediate action to achieve and maintain compliance with the terms and conditions of Part 31 and SRD No. MIU990034.

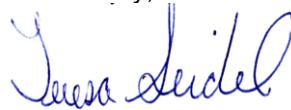
The USAF-Wurtsmith AFB shall submit a Compliance Plan addressing the above noted violations of Part 31 within 30 days of receipt of this Violation Notice. At a minimum, the Compliance Plan shall address the items below.

1. The USAF-Wurtsmith AFB shall provide a schedule for increasing the pumping rate and treatment capacity of the FT-02 Groundwater Pump and Treat System from the current designed capacity of 250 gallons per minute (gpm) (0.36 million gallons per day [MGD]) to the authorized flow maximum flow rate of 1,040 gpm (1.5 MGD) outlined in SRD No. MIU990034. The pumping rate and treatment capacity of FT-02 shall be required to be increased to 1,040 gpm on or before 18 months from the date of this Violation Notice.
2. The USAF-Wurtsmith AFB shall submit a plan to increase the size of the FT-02 plume capture zone from that area equal to or greater than the Provisional Health Advisory Value level for PFOS of 200 ng/L to the area equal to or greater than the GSI water quality standard of 12 ng/L, as is possible within the potential expansion capacity of the FT-02 treatment system to 1,040 gpm. Include justification for the placement of the additional extraction wells.
3. The USAF-Wurtsmith AFB should consider the ultimate endpoint for compliance to be the ability of the groundwater compliance monitoring wells to meet the 12 ng/L PFOS water quality standard.
4. The USAF-Wurtsmith AFB shall begin entering PFOS and PFAS compliance sampling data into MiWaters from groundwater compliance monitoring wells on a monthly basis.
5. The MDEQ is aware that the USAF-Wurtsmith AFB constructed an infiltration pit upgradient from the FT-02 plume capture zone and pumped PFAS contaminated wastewater collected at other locations on the base into the pit. No PFAS contaminated wastewater shall be applied to the FT-02 treatment system collection area.

If you have any factual information you would like us to consider regarding the violations identified in this Violation Notice, please provide them with your written response.

We anticipate and appreciate your cooperation in resolving this matter. Should you require further information regarding this Violation Notice or if you would like to arrange a meeting to discuss it, please contact me at 517-284-5470; seidel@michigan.gov; or MDEQ, P.O. Box 30458, Lansing, Michigan 48909-7958.

Sincerely,



Teresa Seidel, Director
Water Resources Division

cc: Mr. Phil Argiroff, MDEQ
Mr. Tarek Buckmaster, MDEQ
Ms. Christine Alexander, MDEQ
Mr. Charlie Bauer, MDEQ



**DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
JOINT BASE SAN ANTONIO LACKLAND TEXAS**

7 Dec 18

AFCEC/CIB
2261 Hughes Ave., Ste. 155
JBSA Lackland, TX 78236-9853

Ms. Teresa Seidel
Director, Water Resources Division
525 West Allegan Street
P.O. Box 30473
Lansing, MI 48909-7973

RE: Violation Notice No. VN-008900, Substantive Requirements Document (SRD) No. MIU990034 Designated Name: USAF-Wurtsmith AFB, MI

Dear Ms. Seidel:

The Air Force (AF) acknowledges the receipt of Violation Notice No. VN-008900 (hereinafter “notice of violation” or “NOV”) on October 24, 2018, for the former Wurtsmith Air Force Base, Michigan, and hereby provides responses to the concerns raised by the Michigan Department of Environmental Quality (MDEQ). Based on our review of the legal authority for the NOV as cited by MDEQ, the AF is hereby informing you that it will not be taking any new remedial actions at this time. However, the AF will evaluate Michigan’s Rule 299.44 as a potential cleanup standard when it reaches the groundwater remedy selection phase under the federal cleanup law. A detailed discussion of the AF basis for this response is provided below.

The NOV addresses the same issues concerning the groundwater-surface water interface (GSI) that MDEQ raised when it invoked dispute under the Department of Defense and State Memorandum of Agreement (DSMOA) on December 14, 2017. MDEQ’s dispute invocation claimed in part: “[A]dditional sampling is needed to evaluate compliance with Michigan’s statewide criteria for GSI locations as set forth in Part 201. The AF must move more aggressively and more quickly to define and remove the ongoing threat to public health and the environment, starting with the USAF action to provide a long-term potable water supply to affected well users, and followed by response actions to remediate impacted ecosystems, including surface waters, groundwater, fish, birds and mammals.” That dispute is ongoing. Therefore, it is inappropriate for MDEQ to issue a violation notice for the same issues that MDEQ is formally disputing with the AF. See Michigan’s 1992 DSMOA, Section IV.B., which states: “It is the intention of the parties that all disputes shall be resolved in this manner. ... In the event that the Natural Resources Commission and the Service Secretary are unable to resolve a dispute, the State retains any enforcement authority it may have under State or Federal law.” In other words, the DSMOA requires MDEQ to exhaust the dispute resolution process before resorting to issuing a violation notice.

In addition, MDEQ lacks the jurisdictional authority to enforce the NOV. The United States has not waived sovereign immunity with regard to the state regulation on which the NOV is premised. MDEQ's enforcement authority is limited to instances where the federal government has explicitly waived sovereign immunity within the context of an applicable federal statute.

States may impose regulatory authority over federal facilities only to the extent that such regulation is clearly authorized by Congress. Congressional authorizations are generally referred to as "waivers of sovereign immunity." Where no waiver of sovereign immunity exists, the Federal government is not subject to state regulation. *See Mayo v. United States*, 319 U.S. 441, 445 (1943); *see also Department of Energy v. Ohio*, 503 U.S. 607 (1992).

The NOV cites generally to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.3101 et seq., the administrative rules at AACR 323.2101 et seq., and the Substantive Requirements Document referenced above, as authority. The NOV further cites a failure to meet water quality standards per section 3109(a) of Part 31. Although the NOV is insufficient to put the AF on notice as to specifically what provisions of Part 31 were violated and exactly how the AF violated the provisions, we have assumed that the MDEQ is alleging a violation of the Clean Water Act (CWA) under Section 3109 NREPA, which pertains to direct and indirect discharges into waters of the United States. While Section 3109(a) NREPA categorizes discharges of "venting groundwater" in the same manner as point source discharges, the CWA does not. Point source discharges are defined as a "discernible, confined and discrete conveyances." 33 U.S.C. § 1362(14). The CWA does not recognize "venting groundwater" as a point source discharge. As such, the regulation of "venting groundwater" into waters of the United States is a construct of state regulation to which the AF has not waived sovereign immunity.

The CWA has four jurisdictional elements that must be met in order for the Act to apply. For the CWA to have jurisdiction there must be a discharge, of a pollutant, from a point source, to a water of the United States. *Nat'l Wildlife Fed'n v. Gorsuch*, 693 F.2d 156, 165 (D.C. Cir. 1982). If any one of those four elements are missing then the CWA has no legal jurisdiction.

"Venting groundwater" is not a point source discharge subject to CWA regulation. NREPA, MCL 324.3109a(3)(b) defines "venting groundwater" as groundwater that is entering a surface water of the state from a facility. The 6th Circuit United States Court of Appeals, which includes both the eastern and western districts of Michigan recently affirmed in two companion cases that groundwater venting to waters of the United States, also known as hydrological connection, does not constitute a point source discharge subject to CWA regulation. *See Tenn. Clean Water Network v. TVA*, 905 F.3d 436, 2018 U.S. App. LEXIS 27237, 2018 FED App. 0214P (6th Cir.), 48 ELR 20166, 86 ERC (BNA) 2677, 2018 WL 4559103. *See also Ky. Waterways All. v. Ky. Utils. Co.*, 905 F.3d 925, 2018 U.S. App. LEXIS 27238, 2018 FED App. 0213P (6th Cir.), 48 ELR 20167, 86 ERC (BNA) 2657, 2018 WL 4559315. Therefore, non-point source discharges of venting groundwater into Clark's Marsh is not subject to CWA jurisdiction. In this instance, the Federal government has waived sovereign immunity only for discharges that are subject to the jurisdiction of the CWA. Where no waiver of sovereign immunity exists, such as for venting groundwater, the AF is not subject to state regulation.

In addition to the CWA arguments set forth above, the AF is immune under 42 USC § 9620(a)(4) from MDEQ's attempts to enforce its venting groundwater standards.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) §120(a)(4), codified at 42 USC § 9620(a)(4), only waives the federal government's sovereign immunity for state laws concerning "removal" and "remedial" actions at facilities that are not on the National Priorities List (NPL). (The former Wurtsmith AFB is not on the NPL.) In 42 USC § 9601(23) and (24), Congress defines "remove," "removal," "remedy" and "remedial action" to apply only to the release of "hazardous substances." CERCLA defines "hazardous substance" in 42 USC § 9601(14). That definition only includes substances identified within CERCLA's regulations or by such federal laws as the CWA and the Clean Air Act; the definition of "hazardous substance" does not include any substances identified as a hazardous substance solely under state laws. Because a state-listed hazardous substance does not qualify as a CERCLA "hazardous substance," the federal government waiver of sovereign immunity under 42 USC §9620(a)(4) does not extend to state attempts to enforce against the federal government state requirements concerning environmental contaminants that do not constitute CERCLA "hazardous substances."

Violation Notice No. VN-008900 uses the term "GSI" and cites MCLS § 324.3109a, which is part of Michigan's Part 31 statutes (Water Resources Protection). However, none of the Part 31 statutes (including § 324.3109a) or the Part 4 regulations (Water Quality Standards) use the term "groundwater surface water interface" or "GSI." Rather, those statutes and regulations only use the term "venting groundwater." As previously stated Section 324.3109a(3)(b) defines "venting groundwater" as follows: "'Venting groundwater' means groundwater that is entering a surface water of the state from a facility, as defined in section 20101" [emphasis added]. (See an almost identical definition in MCLS § 324.20101(1)(ddd).) "Facility" is defined in MCLS § 324.20101(1)(s) as meaning "any area, place, parcel or parcels of property, or portion of a parcel of property where a hazardous substance in excess of the concentrations that satisfy the cleanup criteria for unrestricted residential use has been released, deposited, disposed of, or otherwise comes to be located ..." (emphasis added). The definition of "hazardous substance" in MCLS § 324.20101(1)(x) is more complicated:

"Hazardous substance" means 1 or more of the following, but does not include fruit, vegetable, or field crop residuals or processing by-products, or aquatic plants, that are applied to the land for an agricultural use or for use as an animal feed, if the use is consistent with generally accepted agricultural management practices at the time of the application or stamp sands:

- (i) Any substance that the department demonstrates, on a case by case basis, poses an unacceptable risk to the public health, safety, or welfare, or the environment, considering the fate of the material, dose-response, toxicity, or adverse impact on natural resources.
- (ii) Hazardous substance as defined in the comprehensive environmental response, compensation, and liability act, 42 USC 9601 to 9675.
- (iii) Hazardous waste as defined in part 111.
- (iv) Petroleum as described as a regulated substance in section 21303.

PFOS and PFOA do not qualify as CERCLA hazardous substances; they are CERCLA pollutants or contaminants under 42 USC § 9601(33). PFOS and PFOA also are not hazardous

wastes, and they obviously are not petroleum. Therefore, the only portion of the MCLS § 324.20101(1)(x) definition that PFOS, PFOA or other PFAS could possibly qualify under is (i). However, as explained above, the federal government is immune under 42 USC § 9620(a)(4) from a state enforcing its state laws for the release of anything other than CERCLA hazardous substances. Because Michigan's Part 31 statutes and Part 4 regulations only apply to venting groundwater and the definition of venting groundwater relies on a definition of hazardous substance from which the federal government is immune, MDEQ cannot enforce its Part 31 statutes or Part 4 regulations on the AF.

The second paragraph of the violation notice also makes a very general reference to Michigan's Part 201, Environmental Remediation. MCLS § 324.20120e(23)(c) (Response activity providing for venting groundwater; definitions), includes the following definition for GSI, but § 324.20120e(23) limits its use to § 324.20120e: “‘GSI’ means groundwater-surface water interface, which is the location at which groundwater enters surface water.” The term “GSI” is not used in any other Part 201 statute, although it does appear in the tables in Rules 299.44, 299.45, and 299.46, as well as in Rule 299.49 (Footnotes for generic cleanup criteria tables). However, the use of the term “GSI” has to be read in context of what the statute and regulations cover. Section 324.20120e only applies to response activities for “venting groundwater.” This is stated plainly in subsections (1) and (3). In fact, subsection 324.20120e(3) clearly links venting groundwater to hazardous substances: “The pathway addressed by GSI criteria under subsection (1) shall be considered a relevant pathway when a remedial investigation or application of best professional judgment leads to the conclusion that a hazardous substance in groundwater is reasonably expected to vent to surface water in concentrations that exceed the generic GSI criteria. . . .” As explained above in the discussion regarding the Part 31 statutes and Part 4 regulations, “venting groundwater” is tied to hazardous substances, and the federal government is immune under CERCLA from a state enforcing a requirement related to substances that are not CERCLA hazardous substances.

Although the AF is immune under 42 USC § 9620(a)(4) from Michigan's attempt to enforce its venting groundwater statutes and regulations, the AF will evaluate Michigan's Rule 299.44 when it reaches the groundwater remedy-selection phase of its CERCLA actions at the former Wurtsmith AFB.

Congress mandated in 42 USC § 9621(d)(1) the degree of cleanup that the federal government must achieve in its remedial actions and stated that federal agencies had to take remedial actions to address not only CERCLA hazardous substances but also pollutants and contaminants. In addition, 42 USC § 9621(d)(2)(a) requires that federal agencies conducting these remedial actions must comply with promulgated state environmental or facility siting laws that are more stringent than federal requirements that are either applicable or relevant and appropriate to the contaminants of concern at a site. Such applicable or relevant and appropriate requirements are known as “ARARs” in CERCLA cleanup documents.

In short, while the AF is immune under 42 USC § 9620(a)(4) from Michigan's attempt to enforce its venting groundwater statutes and regulations, the AF is bound by 42 USC § 9621(d)(1) to evaluate those same state statutes and regulations as potential ARARs when the AF is choosing remedial actions at Wurtsmith. MDEQ will have a chance during CERCLA's

Feasibility Study stage to identify all state statutes and regulations that it believes the AF should accept as ARARs. See 40 CFR § 300.400(g)(4).

Furthermore, the NOV alleges a violation of the Substantive Requirements Document without explaining how the requirements have been violated. The Substantive Requirements Document pertains to the discharge from the granular activated carbon (GAC) plant facility. It does not cover discharges from the groundwater plume, direct or otherwise. Because direct discharge from the GAC plant facility contains no PFAS compounds, the AF is not in violation of the terms of the Substantive Requirements Document.

Although the AF will not be taking any new actions in response to the NOV, we will continue to work with MDEQ to address many of the issues raised in the NOV. We describe this work in the following paragraphs.

The FT-02 pump and treat system (PTS) began operation in April 2015 and was built in collaboration with MDEQ as an interim action to mitigate the migration of PFOS and PFOA contaminated groundwater from the FT-02 source area to Clark's Marsh. The goal of the PTS is to capture and treat PFOS/PFOA groundwater contamination from FT-02. The AF designed the system to capture groundwater in the plume at concentrations which exceeded the 2009 USEPA drinking water provisional health advisories (PHAs) of 200 parts per trillion (ppt) for PFOS and 400 ppt for PFOA. However, the PTS has proven significantly more effective at capturing PFOS/PFOA.

As part of the AF's ongoing performance evaluation of the FT-02 PTS, annual groundwater samples are collected from 68 monitoring wells. In addition, the PTS influent and effluent is sampled on a monthly basis. Annual groundwater monitoring results and PTS data are provided to MDEQ in an annual remedial action operation (RA-O) report. Data is also uploaded to the state's MiWaters system on a monthly basis.

I am enclosing information that provides the effectiveness of the current PTS for FT-02 including recent 2018 data. Attachment 1 is a figure showing the layout of the FT-02 monitoring wells and PTS. Attachment 2 is a figure showing the progression of decreasing concentrations of PFOS from PTS startup in 2015 to 2018. The data represented in this figure validates the major reductions in PFOS/PFOA in the groundwater before reaching Clark's Marsh from FT-02. Also attached at Attachment 3 is a bar chart depicting concentration decreases from 2015 to 2017. Our calculations show an average decrease in PFOS concentrations of 90 percent from 2015 to 2018 in the wells identified in your NOV letter. The AF believes this demonstrates the FT-02 PTS system is more effective than the original design criteria in 2015. Groundwater monitoring analytical results and GAC treatment system influent/effluent data from 2015 to 2017 (Attachment 4) were provided to the MDEQ electronically on November 8, 2018, but are also attached for your convenience.

As part of the ongoing Supplemental Site Inspection (SSI), the AF has installed vertical aquifer sampling (VAS) wells at eight (8) locations to further delineate both the vertical and horizontal extent of PFOS/PFOA contamination in the area of FT-02. This data will be used to further refine the FT-02 conceptual site model and will also be utilized in modeling the capture

zone of the existing extraction well network. The data will also help determine what additional system expansion might be required as part of an evaluation of remedial options under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

CERCLA requires that on-site remedial actions attain or waive federal environmental Applicable or Relevant and Appropriate Requirements (ARARs), or more stringent state environmental ARARs, during selection of the remedial action. The 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) also requires compliance with ARARs during removal and remedial actions to the extent practicable. Once the CERCLA process has reached the feasibility study phase, an analysis of ARARs will be completed, and the AF will evaluate various remedial action alternatives for Site FT-02. Expansion of the FT-02 PTS may be one of the remedial alternatives evaluated.

Please call me at (210) 395-9428 to discuss the AF responses and current path forward with the FT-02 Compliance Plan. The AF is committed to working with the MDEQ to restore the environment and protect human health.

Sincerely,



STEPHEN G. TERMAATH, GS-15, DAF
Chief, BRAC Program Management Division
Installations Directorate

Attachments:

1. FT02 GAC System Layout
2. FT02 PFOS Comparison 2015 to 2018
3. FT02 Bar Chart Comparison of PFOS Data
4. FT02 PFOA PFOS 2017 Data

1 **DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT**
2
3

4 **Solid and Hazardous Waste Commission/Hazardous Materials and**
5 **Waste Management Division**

6 **6 CCR 1007-3**

7
8 **HAZARDOUS WASTE**

9
10 **Addition of Perfluorooctanoic acid (PFOA) and its anion perfluorooctanoate, and**
11 **Perfluorooctane sulfonic acid (PFOS) and its anion, perfluorooctane sulfonate, to the**
12 **Part 261, Appendix VIII List of Hazardous Constituents.**

13
14 1) Appendix VIII of Part 261 is amended by adding the listings for Perfluorooctanoic acid
15 (PFOA) and its anion perfluorooctanoate, and Perfluorooctane sulfonic acid (PFOS) and
16 its anion, perfluorooctane sulfonate to read as follows:
17

18 Appendix VIII -- Hazardous Constituents

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
*****	*****	*****	*****
Pentachlorophenol	Phenol, pentachloro-	87-86-5	See F0276
<u>Perfluorooctanoate</u>		<u>45285-51-6</u>	
<u>Perfluorooctanoic acid (PFOA)</u>	<u>pentadecafluorooctanoic acid</u>	<u>335-67-1</u>	
<u>Perfluorooctane sulfonate</u>		<u>45298-90-6</u>	
<u>Perfluorooctane sulfonic acid (PFOS)</u>	<u>heptadecafluorooctane sulfonic acid</u>	<u>1763-23-1</u>	
Phenacetin	Acetamide, N-(4-ethoxyphenyl)-	62-44-2	U187
*****	*****	*****	*****

27 **2) Section 8.90 {Statement of Basis and Purpose for the Rulemaking**
28 **Hearing of February 20, 2018} is added to Part 8 of the Regulations to read**
29 **as follows:**

Statement of Basis and Purpose

Rulemaking Hearing of February 20, 2018

8.90 Basis and Purpose.

Listing Perfluorooctanoic acid and its anion perfluorooctanoate, and Perfluorooctane sulfonic acid and its anion, perfluorooctane sulfonate, in Part 261, Appendix VIII

These amendments to 6 CCR 1007-3, Part 261 are made pursuant to the authority granted to the Solid and Hazardous Waste Commission in § 25-15-302(2), C.R.S.

The Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Part 261, Subpart B, allow substances to be added to the list of hazardous constituents in the regulations, Part 261 Appendix VIII, if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms. Hazardous constituents listed in the regulations may have impacts to human health or other life forms when released into the environment, and many of the hazardous constituents form the basis for identifying solid wastes as listed or characteristic hazardous wastes under the regulations.

This rule amends existing regulations of the Colorado Hazardous Waste Regulations (6 CCR 1007-3) to add perfluorooctanoic acid and perfluorooctane sulfonic acid, as well as their anions, perfluorooctanoate and perfluorooctane sulfonate respectively, to the list of hazardous constituents in Appendix VIII to Part 261 of the Colorado Hazardous Waste Regulations (6 CCR 1007-3). Addition of these chemicals to the Appendix VIII Hazardous Constituent list ensures any hazards associated with the release of perfluorooctanoic acid and/or perfluorooctane sulfonic acid to the environment at facilities that are either under an existing permit or order for corrective action, or that may have a future release of hazardous waste to the environment and be subject to a permit or order, will be adequately characterized and remediated as necessary to ensure protection of human health and the environment.

Overview of PFOA and PFOS

Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonic acid (PFOS) are synthetic, eight carbon non-polymer organic compounds that are part of a group of toxic chemicals known as perfluoroalkyl and polyfluoroalkyl substances (PFAS). Perfluorinated alkyl substances like PFOA and PFOS are fully fluorinated carbon chain molecules with a basic structure consisting of a chain (or tail) of two or more carbon atoms with a charged functional group head attached at one end. Fluorine atoms are attached to all possible bonding sites along the carbon chain of the tail, except for one bonding site on the last carbon where the functional group head, a carboxylic acid for PFOA and a sulfonic acid for PFOS, is attached. PFOA and PFOS are extremely stable compounds, with their stability derived from the carbon-fluorine bond, the shortest and strongest covalent bond in organic chemistry. They are solid, white powders at room temperature and have low vapor pressures. These compounds possess hydrophobic, oleophobic and surfactant properties and are strong acids that readily dissociate in water. Once released into the

73 environment, PFOA and PFOS typically exist as their negatively charged anions,
74 perfluorooctanoate and perfluorooctane sulfonate. The negative anions have different physical or
75 chemical properties that generally control their fate and transport and potential for human health
76 and ecological effects. For example, the perfluorooctanoate anion is highly water soluble with a
77 negligible vapor pressure, whereas perfluorooctanoic acid has very low water solubility and a
78 sufficient vapor pressure to partition out of water into air.

79 Due to their physical and chemical properties, PFOA and PFOS have a wide variety of uses, and
80 have been produced in the United States since the 1940's. They are used in some industrial
81 processes and a variety of consumer products to make them resistant to heat, oil, stains, grease
82 and/or water. PFOS and PFOA are byproducts of other commercial products meaning they are
83 released in the environment when other products are made, used, or discarded. PFOA has been
84 used historically as a surfactant in the emulsion polymerization of fluoropolymers (e.g.
85 manufacturing of Teflon) and as an additive in other protective coatings. PFOA is also generated
86 as a degradation product of other perfluorinated compounds. PFOS is used in a variety of surface
87 protection products, including textiles and leather, paper and food products, metal plating and
88 clothing, and other materials to make them stain, soil and/or water resistant (e.g. Scotchguard).
89 PFOS has also historically been an ingredient in firefighting foams (e.g. aqueous film forming
90 foam (AFFF)) and alcohol-type concentrate foams.

91 Due to industry and regulatory concerns about the potential health and environmental impacts of
92 these compounds, there has been a reduction in the manufacture and use of PFOA and PFOS in
93 the United States. In May 2000, 3M the principal worldwide manufacturer and sole US
94 manufacturer of PFOS announced a voluntary phase-out of perfluorooctanyl chemistries, which
95 included PFOS and PFOA. Phasing out of these chemicals by 3M was reportedly nearly complete
96 in 2002 with the remaining production terminated by 2008. Additionally, the US EPA initiated a
97 PFOA Stewardship Program in 2006 aimed at committing eight major manufacturing companies
98 to reducing PFOA and other related compound emissions and their use in manufacturing products.
99 The Stewardship Program was very successful, meeting a 95% reduction by 2010 and elimination
100 by 2015. Despite these phase out initiatives however, PFOA and PFOS continue to be produced
101 internationally in China and Russia. Additionally, due to the long shelf life of PFOS-based AFFF
102 foam, these compounds may still be stored and in use at various facilities. Exposure to PFOA and
103 PFOS in the United States remains possible due to their legacy uses, existing and legacy uses on
104 imported goods, degradation of precursors, and high persistence in the environment and human
105 body.

106 Environmental releases of PFOS and PFOA include air emissions and dispersion from industrial
107 sources, spills of chemical products or wastes, and the disposal of manufacturing or consumer
108 wastes and wastewaters. For example, leachate from some municipal solid waste landfills has
109 been shown to be a source of PFAS release to the environment, with the presence of some PFAS
110 reportedly due to the disposal of consumer goods treated with water repelling or stain resistant
111 coating. Additionally, discharges of consumer and industrial PFAS-containing wastes, including
112 landfill leachates and firefighting foams, to wastewater treatment plants (WWTP) results in other
113 possible releases to the environment. WWTPs generally do not treat PFAS like PFOA and PFOS,
114 passing them through to surface and/or groundwater sources, or to the soil if sewage sludge is
115 subsequently applied to agricultural land through biosolids application. Finally, firefighting foam
116 used for extinguishing flammable liquid fires, including AFFF, comprise another significant

117 source of environmental release. These releases include not only use of the foam during
118 firefighting or training exercises, but also releases due to equipment malfunctions, leaks in
119 distribution systems and firefighting foam system testing and calibration checks.

120 PFOS and PFOA are mobile, persistent and bioaccumulative and are not known to degrade in the
121 environment. They are considered terminal PFAS meaning other long chain PFAS will degrade to
122 them, but no further degradation products will form from them under environmental conditions
123 once they are released. PFOS and PFOA have been detected in water, wildlife, and humans
124 worldwide. The primary way people come in contact with these compounds is through ingestion
125 of food, and water (drinking, cooking, or incidental use of contaminated water). PFOA and PFOS
126 are not removed by heating water and can increase in concentration when the water is boiled.
127 Because these compounds generally have low vapor pressure, releases of them to the environment
128 are not expected to be present in air and inhaled. However, inhalation can be a significant route of
129 exposure if it occurs near large manufacturing sources of the compounds and some exposure may
130 also occur through household dust inhalation, or ingestion through hand to mouth transfer for
131 children. Additionally, dermal contact is not a significant pathway for human exposure.

132 Health Effects

133 The US EPA considers PFOA and PFOS to be emerging contaminants due to their perceived,
134 potential, or real threat to human health and the environment. It issued Drinking Water Lifetime
135 Health Advisories (HAs) for the compounds in 2016 (see <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>). EPA develops health advisories
136 to provide information on contaminants that can cause human health effects and are known or
137 anticipated to occur in drinking water. The HAs for PFOA and PFOS were based on best
138 available peer-reviewed studies of the effects of PFOA and PFOS on laboratory animals (rats and
139 mice) as well as epidemiological studies of human populations that have been exposed to PFAS.
140 Scientists are not yet certain about the possible health effects resulting from human exposure to
141 PFAS at levels typically found in our water and food, however PFOS and PFOA have been more
142 widely studied than other PFAS. Studies indicate that exposure to PFOA and PFOS over certain
143 levels may result in adverse health effects, including developmental effects to fetuses during
144 pregnancy or to breastfed infants, cancer, liver effects, immune effects, thyroid effects and other
145 effects.
146

147 The scientific studies used by the US EPA in developing the HAs for PFOA and PFOS are
148 available as “Health Effects Support Document for Perfluorooctanoic Acid (PFOA)” EPA 822-R-
149 16-003 May, 2016 https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_hesd_final_508.pdf and “Health Effects Support Document for
150 Perfluorooctane Sulfonate (PFOS)” EPA 822-R-16-002 May 2016
https://www.epa.gov/sites/production/files/2016-05/documents/pfos_hesd_final_508.pdf. These
151 documents detail the available scientific studies, risk assessment guidance and toxicological
152 factors that show PFOA and PFOS have toxic, carcinogenic, mutagenic or teratogenic effects on
153 humans or other life forms. Specific conclusions regarding the human health and animal studies
154 in the support documents for PFOA and PFOS are briefly summarized below.
155

156 Adverse health effects observed following exposure to PFOA and PFOS are the same or similar
157 and include effects in humans on serum lipids, birth weight, and serum antibodies. Additionally
158 these compounds may affect the developing fetus and child, including possible changes in growth,
159

160 learning, and behavior. These effects also include decreased fertility and interference with the
161 body's natural hormones, increased cholesterol, effects on the immune system, and increased
162 cancer risk.

163 **Human Studies**

164 Human epidemiology data report associations between PFOA exposure and high cholesterol,
165 increased liver enzymes, decreased vaccination response, thyroid disorders, pregnancy-induced
166 hypertension and preeclampsia and cancer (testicular and kidney). Epidemiology data report
167 associations between PFOS exposure and high cholesterol and reproductive and developmental
168 parameters.

169 **Animal Studies**

170 Animal studies on PFOS and PFOA demonstrate similar health effects. Additionally, some of the
171 animal studies show common effects on the liver, neonate development, and responses to
172 immunological challenges. Long-term animal studies show that both compounds are also
173 associated with tumors. For the most part, laboratory animals exposed to high doses of PFOA or
174 PFOS have shown changes in the liver, thyroid, and pancreatic function, as well as some changes
175 in hormone levels. Because animals and humans do not always process chemicals the same way,
176 scientific methods are used to account for these differences and ensure their conclusions about
177 chemicals are protective of the public. Neither PFOA nor PFOS are readily eliminated from the
178 body; their respective half-lives are 4.1 and 8.67 years. Even short term exposures to these PFAS
179 can result in a body burden that persists for years and that can increase with additional exposures.

180 EPA's risk assessment guidelines state that, as a general matter, a single exposure to a
181 developmental toxin, at a critical time in development can produce an adverse effect. As such,
182 EPA derived reference doses (RfDs) for both PFOA and PFOS based on developmental endpoints
183 (reduced ossification and accelerated puberty in males for PFOA and decreased pup birth weight
184 for PFOS). Because the RfDs for both PFOA and PFOS are based on similar developmental
185 effects and are numerically identical, when these two chemicals occur at the same time and
186 location in a drinking water source, a conservative and health-protective approach recommended
187 by the EPA is to sum their exposure collectively.

188 While the associations for most epidemiology endpoints are mixed, the weight of evidence for
189 human studies supports the conclusion that PFOS and PFOA exposure is a human health hazard.
190 At this time, the US EPA concludes that the human health studies are adequate for use
191 qualitatively in the identification hazard and are supportive of the findings in laboratory animals.
192 PFOS and PFOA have been shown in scientific studies to be toxic and potentially carcinogenic to
193 humans satisfying the regulatory criteria for listing.

194 **Regulatory Evaluation**

195 These amendments incorporate PFOA and PFOS and their respective anions into the list of
196 hazardous constituents in the Colorado Hazardous Waste Regulations (6 CCR 1007-3), Part 261
197 Appendix VIII. Many hazardous constituents form the basis for characteristic and/or listed
198 hazardous waste in the regulations (see 6 CCR 1007-3, Part 261 Appendix VII), and solid wastes
199 may be listed if, after considering several factors, they contain any Appendix VIII hazardous
200 constituents and pose a substantial present or potential hazard to human health or the environment

201 when improperly treated, stored, transported or disposed of, or otherwise managed in accordance
202 with 6 CCR 1007-3, Section 261.11(3).

203 These amendments are designed only to incorporate PFOA and PFOS into the regulations as
204 hazardous constituents. Additional hazardous waste listings or characteristics based on PFOA or
205 PFOS are not being proposed with these amendments. Under these amendments, if PFOA or
206 PFOS are released into the environment, the release would not be considered a release of a
207 hazardous waste unless the solid waste released was already a listed or characteristic hazardous
208 waste as currently defined in the regulations.

209 However, a facility that is seeking, that has or had, or that should have had a hazardous waste
210 permit, or that has had a release of hazardous waste to the environment, must complete corrective
211 action at the facility as necessary to characterize and assess the release of any Appendix VIII
212 hazardous constituents to the surface water, groundwater, or soil in accordance with 6 CCR 1007-
213 3, Section 100.41(d) (RCRA 3004(u)) or 6 CCR 1007-3, Section 265.5 (RCRA 3008(h)). Listings
214 of PFOS and PFOA as hazardous constituents in the Colorado Hazardous Waste Regulations (6
215 CCR 1007-3) under these amendments will therefore provide greater protection to human health
216 and the environment at these facilities because these compounds will need to be considered and
217 included as necessary in site-wide corrective action. That is, any release of PFOA or PFOS at a
218 facility under a hazardous waste order or permit, must be characterized and assessed, and if
219 necessary addressed through remedial action(s) to protect human health and/or the environment.

220 Corrective action at hazardous waste management facilities under these amendments will be
221 implemented in accordance with the regulations using existing Hazardous Materials and Waste
222 Management Division policy. No changes in corrective action policy are anticipated or needed to
223 address the addition of PFOA and PFOS to Appendix VIII of the Colorado Hazardous Waste
224 Regulations (6 CCR 1007-3). Sampling and analytical methods for the detection and
225 identification of PFOS and PFOA in groundwater, surface water and soil are available using EPA
226 Method 537 Liquid Chromotography Tandem Mass Spectroscopy, which possess detection limits
227 equal to 10 ppt in drinking water. EPA's advisory level of 70 ppt for combined PFOA and PFOS
228 in drinking water is also considered protective under unrestricted use or a level at which adverse
229 health effects are not anticipated to occur over human lifetime. Additionally, advancement of
230 analytical technologies, including real-time analysis are under development. Available treatment
231 technologies for PFOS or PFOA soil contamination include excavation, in-situ binding to reduce
232 leaching, and incineration. Available treatment technologies for surface and groundwater include
233 membrane (reverse osmosis) and Granular Activated Carbon treatment.



DEPARTMENT OF DEFENSE
REGIONAL ENVIRONMENTAL COORDINATOR, REGION VIII
REGIONAL ENVIRONMENTAL AND ENERGY OFFICE - WESTERN
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DENVER, CO 80202

27 March 2018

Trisha Oeth, Administrator
Colorado Water Quality Control Commission
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South, A-5
Denver, CO 80246

Via email: cdphe.wqcc@state.co.us and trisha.oeth@state.co.us

On behalf of the Department of Defense (DOD) in Colorado I am writing in response to the proposed revision to Regulation No. 42 Site-Specific Water Quality Classifications and Standards for Groundwater. The DOD has two main concerns with this proposed regulation: 1) it is not applicable to all releases of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic acid (PFOS), including acid and conjugate base as well as linear and branched isoforms, within the State, and 2) it may not qualify as a cleanup standard, referred to as an Applicable or Relevant and Appropriate Requirement (ARAR), under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

In general, in order for a state standard to be enforceable against federal facilities, it must be non-discriminatory (i.e., apply to all entities in the state), properly promulgated, and fall within a federal waiver of sovereign immunity. In reviewing the Statement of Basis (Sec. 42.37), the U.S. Air Force and Peterson Air Force Base are identified as the sole entity and site currently investigating the extent of contamination from sources on base. This proposed regulation is not uniformly applied to all regulated entities throughout the State and potentially singles out DOD and its components for disparate treatment. Sufficient justification for narrowing the scope of the standards to releases at this specific site have not been made. Failure to extend the proposed application to all potential sites and entities state-wide demonstrates the discriminatory

nature of the proposed standard. Federal sovereign immunity is only waived when state regulation is non-discriminatory.

DOD conducts its environmental restoration program in accordance with CERCLA and its implementing regulation, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Under CERCLA and the NCP, once the need for remedial action is established by a CERCLA risk assessment, state cleanup standards are evaluated as ARARs under CERCLA and the NCP. Remedial options must meet two threshold criteria: protection of human health and compliance with ARARs (although there is an ARAR waiver process for certain circumstances). An example of a risk-based (protective) cleanup level is 0.4 µg/L (400 ppt) in groundwater that is used as drinking water, based on the EPA Reference Dose for PFOS/PFOA. Then a State cleanup level is evaluated on a site-specific basis on whether it should be considered an ARAR. In general, a State requirement must be: 1) properly promulgated, 2) more stringent than Federal standards, 3) legally “applicable” or “relevant and appropriate” as described in the NCP, and 4) timely identified, to qualify as an ARAR. While a detailed analysis has not been performed, it appears that the Colorado regulation may not qualify as an ARAR. For example, it does not meet the “properly promulgated” criterion as the standard is not of general applicability.

If you have questions or need additional information, please contact Julia Miller at 303-844-0952. Thank you for the opportunity to provide input.

Sincerely,



Mark Mahoney
Department of Defense
Regional Environmental Coordinator, Region 8



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5 October 2017

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Dobbins ARB GA 30069-5000

Ryan H. Knapick, Esq.
Attn: DEP Docket Number: 13-17-06
Office of Legal Affairs
Department of Environmental Protection
401 East State Street, 7th Floor
Mail Code 401-04L
PO Box 402
Trenton, New Jersey 08625-0402

Dear Mr Knapick:

The DoD Regional Environmental Coordinator (REC) for Federal Region 2 is responsible for coordinating responses to state environmental legislative and regulatory matters that have a potential for adversely impacting one or more of the military services. DoD takes its environmental responsibilities very seriously and appreciates the State of New Jersey for taking efforts to ensure the safety of the State's drinking water quality. Our role as the DoD REC includes monitoring state environmental legislative and regulatory initiatives and, as necessary, coordinating with the military services to develop and submit DoD comments to the states when their legislative or regulatory proposals adversely affect the ability of DoD to perform its national defense mission.

Accordingly, DoD appreciates the opportunity to provide the attached comments for consideration on the New Jersey Department of Environmental Protection's (NJDEP) proposal to amend the New Jersey Safe Drinking Water Act (SDWA) rules at N.J.A.C. 7:10 to establish, as recommended by the New Jersey Drinking Water Quality Institute (Institute), a maximum contaminant level (MCL) for perfluorononanoic acid (PFNA) of 0.013 micrograms per liter ($\mu\text{g/l}$) and an MCL for 1,2,3-trichloropropane (1,2,3-TCP) of 0.030 $\mu\text{g/l}$.

If you or your staff has questions concerning DoD's position, please contact me at (678) 655-9532 or at ronald.joyner@us.af.mil.

Sincerely,

RONALD JOYNER, GS-14, DAF
DoD Regional Environmental Coordinator
Federal Region 2

Attachment:
DoD Comments

Cc: Mr Patrick Timm, Army REC, Region 2,
Ms Sharon Baumann, Navy REC, Region 2,

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NJDEP - OFFICE OF
LEGAL AFFAIRS

Department of Defense Comments
NJDEP Docket Number: 13-17-06

**Scientific and Procedural Issues Related to the NJDEP Proposed
Maximum Contaminant Level (MCL) for Perfluorononanoic Acid (PFNA)**

Overall comment:

The New Jersey Department of Environmental Protection's (NJDEP) proposal fails to document two important issues required to support the establishment of the maximum contaminant level (MCL) for Perfluorononanoic Acid (PFNA). DoD is concerned about the scientific basis supporting the proposed MCL, including the need for a transparent and scientific peer review process, and the potential burdensome economic impact.

First, the NJDEP proposal fails to provide a scientific basis for the proposed health effects of PFNA. For example, the NJDEP proposal does not discuss why the adverse health effects of exposure to PFNA are significantly different than other similar compounds. On May 25, 2016, the U.S. Environmental Protection Agency issued health advisories of 70 ppt for Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). The health advisories were established to provide a margin of protection, including the most sensitive populations, from a life-time of exposure to PFOS and PFOA in drinking water. The NJDEP proposed MCL of 13 ppt for PFNA is significantly below the EPA's health advisory for these related compounds.

Second, the NJDEP proposal fails to provide a complete estimate of the economic costs from establishing the MCL as it fails to account for treatment costs and administrative costs. The NJDEP should revise the proposal to account for reasonably expected costs such as permits, pilot studies and land acquisition, direct and indirect capital costs, and operation and maintenance costs. The current NJDEP proposal only addresses one time capital costs and monitoring costs.

1. MCL for PFNA

Proposed Requirement or Section Addressed: Section: PFNA, MCL for PFNA, pages 5–6

Comment: New Jersey's "Safe Drinking Water Act" statutory authority 58:12A-13b requires that state-derived MCLs be scientifically and technically feasible, practicable, and based on the best information available. Additionally, the Federal Safe Drinking Water Act statutorily requires "the best available, peer reviewed science and supporting studies conducted in accordance with sound and objective scientific practices; and data collected by accepted methods or best available methods." 42 U.S.C. §300g-1(b)(3)(A) & (B). It would be inconsistent with the underlying enabling statutes to adopt an MCL based on rationale other than scientifically accepted methodologies and peer reviewed processes. Overall, NJDEP's derivation of the PFNA MCL is technically insufficient and in violation of the requirements.

Issues:

- a. The best information and available scientific evidence on PFNA is not sufficient to characterize PFNA's potential human toxicity.
- b. The methods utilized by the State to overcome the gaps in the scientific knowledge are not technically supportable and lead to extreme overestimates of potential toxicity.
- c. The technical assessment of PFNA toxicity was not independently reviewed by experts.
- d. The practicability and feasibility of implementing the PFNA MCL and PQL was not adequately considered.

References:

New Jersey Drinking Water Quality Institute (DWQI), 2015, Maximum Contaminant Level Recommendations for Perfluororononanoic Acid in Drinking Water.
<http://www.nj.gov/dep/watersupply/pdf/pfna-recommend-final.pdf>

New Jersey Department of Environmental Protection (NJDEP), 2015, NJDEP Response Summary on Request for Public Input on the Draft Interim Specific Groundwater Quality Criterion and Draft Practical Quantitation Level for Perfluororononanoic Acid (PFNA).
http://www.state.nj.us/dep/dsr/supportdocs/pfna/Response%20Summary%20to%20public%20commentsPFNA%20documents%2010_20_15.pdf

2. Health Effects of PFNA

Proposed Requirement or Section Addressed: Section: PFNA, Health Effects Subcommittee, pages 7–10

Comment: The Basis and Background Document selectively presents positive associations from epidemiology studies only, does not accurately present the entire weight of evidence for both laboratory animal and epidemiology studies, nor provides a critical analysis of study methods and results. The proposed MCL does not set a standard for the highest quality and best available science. Standards based on poor scientific methodologies are often the subject of litigation because they are arbitrary.

Issues:

- a. Some of the information from the key study utilized by NJDEP (Das et al. 2015) is not publicly available and cannot be reproduced or verified.
- b. The critical effect selected by NJDEP (change in rodent absolute or relative liver weight) is not indicative of adverse effects in humans.
- c. The bench mark dose (BMDL) used to derive the point of departure is not based on standard best practices for dose-response analysis or EPA's guidance.
- d. The uncertainty factors are not justified or technically supported.
- e. The serum to drinking water ratio factor of 200:1 is highly uncertain.
- f. The assumption that PFNA is twice as persistent as PFOA in humans is contradicted by empirical data, including biomonitoring data.

- g. The relative source contribution (RSC) term based on the 95th percentile upper bound does not follow EPA guidance, which is to calculate the average percentage of total dose attributable to drinking water.

3. Testing of PFNA

Proposed Requirement or Section Addressed: Section: PFNA, Testing Subcommittee, pages 10–11

Comment: There is insufficient information concerning the availability of feasible or practicable testing technologies that could achieve the proposed PFNA MCL.

Issues:

- a. NJDEP has not considered the impracticality of measuring PFNA throughout the state's water supplies, given the few commercial laboratories currently certified by the State for PFNA analysis in drinking water, and none located in New Jersey.
- b. New Jersey needs to confirm reporting limit and PQL variability after the initial demonstration of capability.
- c. New Jersey should explain how eight minimum reporting limits were chosen to develop the PQL of 5ng/l for PFNA and if any MRLs were dropped from consideration.
- d. New Jersey notes on page 11 that the MDL has historically been used to derive the PQL, but has not adequately justified their departure from this approach in developing the PQL for PFNA. Further, the New Jersey Ground Water Quality Standards require that preference be given to setting the PQL at 5 times the MDL (N.J.A.C. 7:9C-1.9(c)3ii(1)). Given that the PQL is the groundwater remediation standard in the Pinelands National Reserve, it is critical that a consistent, defendable method be used for developing PQLs.

4. Social Impact of PFNA

Proposed Requirement or Section Addressed: Section: PFNA, Social Impact, pages 31–33

Comment: NJDEP has not considered the social impact associated with state-wide sampling efforts for PFNA at the PQL and MCL. Poor implementation of regulations based on arbitrary information undermines the public trust in its health agencies.

Issues:

- a. NJDEP has insufficient information on how many water suppliers or drinking water sources in New Jersey may be impacted by PFNA, and required to implement sampling and treatment on their drinking water supplies.
- b. NJDEP has incomplete information on how many groundwater aquifers in New Jersey may be impacted by PFNA, and required to implement groundwater remediation to the MCL.
- c. NJDEP has not considered the impact of the proposed MCL on other state

programs, such as the Brownfields Act and groundwater cleanup programs.

5. Economic Impact of PFNA

Proposed Requirement or Section Addressed: Section: PFNA, Economic Impact, pages 33–38

Comment: NJDEP has not fully considered the economic burden associated with state-wide sampling efforts for PFNA at the PQL and MCL. At such extremely low concentrations, it would be overly burdensome for water systems to attain the MCL which would deplete monetary resources currently used for other health based programs.

Issues:

- a. NJDEP does not comprehensively evaluate overall treatment costs, including capital and operational costs for the considered treatment technologies. The NJDEP fails to calculate complete operation and maintenance costs or account for Administrative costs. The proposal only considers the installation cost for GAC treatment and for costs associated with sampling. While the costs associated with the operation and maintenance of a GAC system will vary depending on such factors as the background quality of the source water, the size of the installation and the concentration of the target contaminant in the source water, the presence of such variables should not preclude estimating the full costs of compliance with the new MCL. The economic analysis should be expanded to consider costs as follows: operating expenditures ranging between \$0.30 and \$0.49 to treat 1000 gallons of water and a treatment lifetime of 30 years. Separate economic analyses should be considered and large and small systems as the costs of compliance can vary widely for systems of different sizes. See EPA's Drinking Water Treatment Technology Unit Cost Models available at <https://www.epa.gov/dwregdev/drinking-water-treatment-technology-unit-cost-models-and-overview-technologies>.
- b. Per N.J.A.C. 7:9C-1.7(c)3i), If New Jersey promulgates an MCL for a constituent, the health-based level used to establish the MCL shall be the specific ground water quality criterion for the constituent. However, in the Pinelands National Reserve, the groundwater remediation standard is set at the PQL (N.J.A.C. 7:26D-2.2(2); N.J.A.C. 7:9C-1.7(b); and N.J.A.C. 7:9C-1.9(c)). New Jersey has not considered the economic burden or the technical impracticability associated with cleaning up groundwater within the Pinelands National Reserve to the proposed PQL of 5 ng/l.

State	DoD Component	Installation	On-base water systems tested	Number above EPA HAL	Results	Non-DOD systems tested	Number above EPA HAL	Results (ppt)
Alaska	Air Force - ANG - BRAC	Eielson AFB	1	1	9-111	174	169	83-2222
Alaska	Navy	Naval Base Kitsap - NARL Barrow			5		5	144-262
Army								
Belgium		USAG Benelux - Caserne Daumerie, BE	1	1	84-94			
California	Air Force - ANG - BRAC	Former March AFB			8	3	70-168	
California	Air Force - ANG - BRAC	Former Mather AFB			8	1	193	
California	Army							
California		Fort Hunter Liggett	1	1	120			
California	Navy	NSA Monterey - Naval Radio Transmitter Facility Dixon	1	1	260			
California	Navy	Weapons Station Seal Beach- NOSC Moreno	N/A	1	125-135			
California	USMC	MCB Camp Pendleton (South)	1	1	77			
California	USMC	MCLB Barstow			2	1	103	
Colorado	Air Force - ANG - BRAC	Peterson AFB			88	44	70-7910	
Delaware	Air Force - ANG - BRAC	Dover AFB			20	1	91	
Delaware	Air Force - ANG - BRAC	New Castle ANGB (166th)	1	1	140-1800			
Delaware	USMC	MARFORRES-MCRTC Wilmington	N/A	1	130-1,800			
Diego Garcia	Navy	NSF Diego Garcia	5	3	77 - 5,849			
Florida	Navy	NAS Whiting Field (Main Base)			9	1	259	
Guam	Navy	Agana			12	5	88-410	
Guam	Army							
Honduras		Soto Cano AB, HN	1	1	72.5-82.9			
Idaho	Air Force - ANG - BRAC	Mountain Home AFB	1	1	77-105			
Kansas	Army	Ft. Leavenworth	1	1	97-649 combined			
Korea	Army	USAG Daegu, KR Camp Carroll	1	1	76-1,066			
Korea	Army	USAG Daegu, KR Camp Walker	1	1	91-789			
Korea	Army	USAG Red Cloud, KR: Camp Red Cloud	1	1	171-466			
Korea	Army	USAG Red Cloud, KR: Camp Stanley	1	1	80-1,061			
Massachusetts	Air Force - ANG - BRAC	Barnes ANGB (104th)	1	1	43-160			
Massachusetts	Air Force - ANG - BRAC	Joint Base Cape Cod			82	24	73-488	
Michigan	Air Force - ANG - BRAC	Former KI Sawyer AFB			13	1	202-3651	
Michigan	Air Force - ANG - BRAC	Former Wurtsmith AFB			69	1	2923	
Michigan	Army							
Michigan	Army	Belmont Armory	1	1	86.6 - 96.8			
Michigan	Army	Camp Grayling Joint Maneuver Training Center			188	4	70-188	
New Hampshire	Air Force - ANG - BRAC	Former Pease AFB/ Pease ANGB (157th)	1	1	2500	38	5	72-870
New Hampshire	Air Force - ANG - BRAC	New Boston AFS	1	1	13-83			
New Jersey	Air Force - ANG - BRAC	Joint Base McGuire-Dix-Lakehurst			177	3	152-1688	
New Jersey	Navy	NMC Earle			28	2	70-228	
New York	Air Force - ANG - BRAC	Former Plattsburgh AFB			53	4	90-142	
New York	Air Force - ANG - BRAC	Gabreski ANGB (106th)	1	1	0-530			
New York	USMC	Marine Forces Reserve (MARFORRES)-Marine Corps Reserve Training Center (MCRTC) Stewart	N/A	1	140-170			
North Carolina	Army	81st RSC: E. Earle Rives AFRC	1	1	<40-90			
Ohio	Air Force - ANG - BRAC	Wright-Patterson AFB	2	1	90-235			
Pennsylvania	Air Force - ANG - BRAC	Harrisburg IAP (ANG) (193rd)	1	1	20-103			
Pennsylvania	Air Force - ANG - BRAC	Horsham AGS (AGS) (111th)	1	1	60-290	154	61	82-1870
Pennsylvania	Navy	Warrminster (Private)			345	65	71-1,800	
Pennsylvania	Navy	Warrminster (Public)*			17	4	88-1,300	
Pennsylvania	Navy	Willow Grove (Private)			492	92	72-8,100	
Pennsylvania	Navy	Willow Grove (Public)*			14	7	74-1,000	
South Dakota	Air Force - ANG - BRAC	Ellsworth AFB			1	1	182	
South Korea	Air Force - ANG - BRAC	Kunsan AB	1	1	55-85			
South Korea	Army							
Texas		El Campo	1	1	79			
Virginia	Navy	NAS Oceana - NALF Fentress	1	1	2,800 - 4,900	54	7	74-1,660
Washington	Air Force - ANG - BRAC	Fairchild AFB			106	44	75-5700	
Washington	Army							
Washington		JB Lewis-McChord: Fort Lewis Cantroment	4	4	72-250			
Washington	Navy	NAS Whidbey Island - Ault Field (Private)			103	2	140-3,823	
Washington	Navy	NAS Whidbey Island - OLF Coupeville (Private)*			100	7	130-660	
West Virginia	Army	99th RSC Martinsburg Memorial USARC	1	1	0-79-0-71			

1. According to our research, the Department of Defense or its entities are contesting various state regulatory actions re: PFAS in New Mexico, Michigan, and New York, while issuing comments or letters questioning draft or promulgated statutes in New Jersey and Colorado.

Given past statements by Maureen Sullivan and regional DOD/military officials that DOD sites would comply with state statutes, why is the DOD taking such actions?

2. If not answered above, has the DOD established any blanket policy or directive not to comply with state environmental statutes on PFAS issues?

3. Is the DOD or its service departments tracking or maintaining a list of orders issued to it by state regulatory agencies re: PFAS? If so, how many orders have been complied with and how many has the DOD not complied with, and can you provide a list of orders?

4. Is the DOD maintaining a list of states that have drafted or have declared their intention to draft PFAS standards? If so can you please provide this list?

5. How much money has the DOD and its departments spent to date in investigating PFAS at DOD sites? Regarding total potential liability, is Ms. Sullivan's \$2 billion estimate the most up to date figure?

6. The state of New Jersey is currently advancing drinking water standards of 13 ppt for PFOS and 14 ppt for PFOA, which would also become groundwater standards under state law. If made law, does the military intend to comply with these standards by providing clean drinking water for any water sources contaminated above those amounts and selecting the groundwater standards as ARARs at any applicable sites?

7. Does the DOD/AF recognize the legal legitimacy of New Jersey's 14 ppt PFNA standard? Will it comply in cases where water exceeds 14 ppt for PFNA?

8. Regarding the situation in Fort Devens and Ayer, Massachusetts, why did the DOD/Army reverse its initial position on EPA Region 1's (July 3, 2018) request that it agree to fund drinking water treatment for the town and take other actions. Was it because the agency stated it would issue a Safe Drinking Water Act order?

9. Under DERP, if there is a disagreement between DOD or EPA on an ARAR selection, which agency has ultimate authority to select the ARAR standard used in an ROD?

10. Is the Department of Defense or its service departments delaying the completion of PFAS remedial investigations and/or issuance of RODs until the completion of SERDP or other research projects evaluating fate and transport, detection, and remedial technologies?

11. Does the DOD have any indication or estimates of when any RODs regarding PFAS contamination at any site will be reached?

12. General statement: We are aware of DOD's prior statements that it is primarily focused on stopping PFAS drinking water exposure where it exceeds the 70 ppt HAL, and has taken interim removal actions where appropriate. If the DOD wishes to provide any more detailed or additional comment on its PFAS remedial strategy, we would welcome it.

[REDACTED] media

Bucks County Courier Times - PFAS Questions - Deadline EOD 3/25

Babb, Heather S CIV OSD PA (USA) [REDACTED]
To: "Bagenstose, Kyle" <kbagenstose@couriertimes.com>

Mon, Mar 25, 2019 at 3:28 PM

Hi Kyle,

[REDACTED]
"PFOS and PFOA is a national issue that needs a national regulatory solution. DOD has proactively addressed PFOS and PFOA and follows the federal cleanup law. DOD's priority is to quickly address PFOS and PFOA in drinking water from DOD activities."

"DOD, like any federal agency engaged in certain activities, such as owning or operating a public water system, must comply with all federal, state, interstate, and local safe drinking water requirements, in accordance with the Safe Drinking Water Act."

"Once we have eliminated the exposure of people to PFOS and PFOA, we focus on the much longer process of addressing the contaminants in the soil and groundwater, which we do under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). We do not track funding by contaminant."

"DOD supports EPA establishing regulatory standards and a consistent cleanup approach for PFOS/PFOA based on the federal cleanup law CERCLA. We want a standard risk-based cleanup approach that is based on science and applies to everyone."

"DOD takes our cleanup responsibility seriously. We work with regulatory agencies and local communities to ensure we can share information in an open and transparent manner."

For information or a list of states looking at regulations for PFAS-impacting sites, I would refer you to the Interstate Technology and Regulatory Council.

Thanks.

Best,

Heather

Heather Babb
DOD spokeswoman, Public Affairs Operations
Office of the Assistant to the Secretary of Defense (Public Affairs)
[REDACTED]